Reference No. 46
Southside Chattanooga Lead Site
EPA ID No.: TNN000410686

33-645

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

RECORD OF DECISION

PROPOSED CHATTANOOGA STADIUM PROPERTIES
CHATTANOOGA, TENNESSEE

Prepared for:

THE STADIUM CORPORATION
Chattanooga, Tennessee

Prepared by:

Law Engineering and Environmental Services, Inc.
Nashville, Tennessee

December 19, 1996

Law Project No. 50417-6-0002

33-645

02132

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

December 19, 1996

The Stadium Corporation
c/o Mr. Phillip E. Hoover
Chambliss & Bahner
1000 Tallan Building
Two Union Square
Chattanooga, Tennessee 37402

Subject: **Record of Decision**
Proposed Chattanooga Stadium Properties
Chattanooga, Tennessee
Law Project No. 50417-6-0002

Dear Mr. Hoover:

Law Engineering and Environmental Services, Inc. (Law) is pleased to submit the enclosed Record of Decision for the Proposed Stadium Properties in Chattanooga, Tennessee.

We appreciate the opportunity to provide these services to The Stadium Corporation, and look forward to our continued relationship. If you have any questions regarding this Record of Decision or wish to discuss the project in general, please contact us at (615) 832-0513.

Sincerely,

Law Engineering And Environmental Services, Inc.

Brian L. Sutherland, E.I.T.
Environmental Project Manager

Raymond J. Lawing, P.E.
Assistant Vice-President
Principal

BLS/ld

Enclosure

cc w/encl: Richard Linio - The Stadium Corporation

02133

33-645

445 METROPLEX DRIVE • NASHVILLE, TN 37211
(615) 832-0513 • FAX (615) 832-0983

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

December 19, 1996

Mr. Paul Bradshaw
Division of Superfund
Tennessee Department of Environment and Conservation
Chattanooga Environmental Field Office
540 McCallie Avenue - Suite 550
Chattanooga, Tennessee 37402

Subject: Record of Decision
Proposed Chattanooga Stadium Properties
Chattanooga, Tennessee
Law Project No. 50417-6-0002

Dear Mr. Bradshaw:

Law Engineering and Environmental Services, Inc. (Law) is pleased to submit the enclosed Record of Decision for the Proposed Chattanooga Stadium Properties for your review and comment.

If you have any questions regarding this Record of Decision or wish to discuss the project in general, please contact Phillip Hoover of Chambliss & Bahner at (423) 756-3000.

Sincerely,

Law Engineering And Environmental Services, Inc.

Brian L. Sutherland, E.I.T.
Environmental Project Manager

Pat Owens for
Raymond J. Lawing, P.E.
Assistant Vice-President
Principal

BLS/ld

Enclosure

cc w/encl: Richard Linio - The Stadium Corporation
Phillip Hoover - Chambliss & Bahner

33-645

02134

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

02135

33-645

CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW, INCLUDING BUT NOT LIMITED TO PENALTIES FOR PERJURY, THAT THE INFORMATION CONTAINED IN THIS DOCUMENT AND ON ANY ATTACHMENT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR INTENTIONAL VIOLATION.

This 30 day of December, 1996.

The Stadium Corporation
1000 James Building
735 Broad Street
Chattanooga, Tennessee 37402

By: Richard T. Linio

Title: Executive Director

Before me, a Notary Republic of Hamilton County, Tennessee, personally appeared Richard T. Linio, with whom I am personally acquainted (or approved to me on the basis of satisfactory evidence), and who, upon oath, acknowledged himself to be Executive Director of The Stadium Corporation, and that he as such Executive Director executed the foregoing instrument for the purposes therein contained, by signing the name as Executive Director of The Stadium Corporation.

WITNESS my hand and seal, at office in Hamilton County, Tennessee, this 30th day of December, 1996.

Notary Public

My Commission Expires: My Commission Expires July 20, 1997

02136

33-645

1.0 BACKGROUND INFORMATION

The properties comprising the proposed Chattanooga Stadium site are located in downtown Chattanooga, Hamilton County, Tennessee (Figure 1). The properties include Rock City Paper Box Corporation/Rock-Tenn Company, ABB-CE Harriman, Kessler Industrial Corporation/Casting Materials Company, Dennie Townson/Daniel Moving and Storage, a vacant property reportedly owned by the City of Chattanooga, a small parcel owned by the Chattanooga Electric Power Board, Classic Refinery, and the inactive Ross-Meehan Foundry (Figure 2).

Prior to implementing the Remedial Investigation of the proposed Chattanooga Stadium site, current site use information; local, state, and Federal regulatory files; available site historical information; and previous environmental assessment reports were reviewed to identify actual or potential environmental concerns and to provide the basis for development of a Remedial Investigation Work Plan. The following presents a summary of site locations, descriptions, historical information, and previously identified environmental concerns for the properties comprising the proposed Chattanooga Stadium site.

ABB-Combustion Engineering

The **ABB-Combustion Engineering** (CE) property is located at the southeast corner of Main and Carter Streets. The property consists of approximately 4 acres occupied by two, 4-story structures and an asphalt-paved parking apron. Historically, operations conducted at the **ABB-CE** site include Chattanooga Plow Company from the mid to late 1800s until 1935, International Harvester Company from 1935 to 1948, Harriman Manufacturing Company from 1948 until 1974, and ABB-Combustion Engineering from 1974 to the present.

In April 1992, two 8,000 gallon steel underground storage tanks (USTs) were removed from along the common property line separating the ABB-CE and Dennie Townson properties near the southernmost portion of those properties. The soil from the vicinity of the former UST pit was reportedly excavated and stockpiled at the ABB-CE site. Eight ground-water monitoring wells were installed to characterize and delineate the petroleum contaminant plume. Total petroleum hydrocarbon

(TPH) in ground water in the area of the former USTs was determined to be below applicable Tennessee Department of Environment and Conservation (TDEC) Division of Underground Storage Tanks (DUST) cleanup limits and the DUST issued a letter of closure for the site. Approximately 711 cubic yards of soil from the UST closure remain stock-piled on-site in two windrows for petroleum aeration and biodegradation. Testing of the stock-piled soil in late 1995 indicated that TPH contamination was below DUST action limits. The DUST subsequently issued a letter to ABB-CE stating their acceptance of the analytical results and approving on-site disposal of the soil. Monitoring wells installed for the ground-water quality assessment were abandoned in late 1995.

A 1993 environmental site assessment indicated TPH concentrations in one on-site monitoring well exceeded the DUST clean-up level for non-drinking water. The potential source of the petroleum contamination was identified as a former gasoline station that was located north of the intersection of Main Street and Carter Street.

A subsequent Phase I Environmental Assessment Report identified the previously reported TPH in ground water as an environmental concern at the property. Two water-filled sumps and a burned debris pile located near the "Old Power House" structure on the extreme southeast portion of the ABB-CE property, the potential presence of PCBs in fluorescent light ballasts, suspect asbestos-containing materials, and potential lead-based paints on building surfaces were also identified as concerns.

<u>**Dennie Townson/Daniel Moving and Storage**</u>

The **Dennie Townson/Daniel Moving and** Storage site is located at the southwest corner of the intersection of Main and Chestnut Streets. The property consists of a 1.5-acre parcel occupied by two, single-story structures. Tenants at the property include Daniel Moving and Storage and American Truck Equipment. Historically, operations conducted at the site include Enterprise Machine Works and Truxal & Printer Machine Company in the late 1800s, Chattanooga Plow Company until 1935, International Harvester Company from 1935 to 1959, and various motor vehicle service and repair facilities from 1948 to the present.

A previous Phase I Environmental Assessment Report identified apparent on-site disposal of oil, paint waste, and solvent as potential concerns at the site. The potential presence of PCBs in fluorescent light ballasts, suspect asbestos-containing materials, and potential lead-based paints on building surfaces were also identified as concerns.

Casting Materials Company

The **Casting Materials** Company property located at 1610 Carter Street consists of approximately 1.7 acres occupied by a large single-story structure, several smaller ancillary storage structures, and an asphalt-paved parking apron. Historically, operations conducted at the site include Chattanooga Plow Company from the mid to late 1800s until 1935, International Harvester Company from 1935 to 1948, Harriman Manufacturing Company from 1948 until 1974, ABB-Combustion Engineering from 1974 to 1975, Ross-Meehan Foundry from 1975 until 1988, and Kessler Industrial Corporation from 1988 until the present.

A subsurface investigation conducted during a real estate transaction screening in 1991 documented TPH in ground water at concentrations less than the TDEC DUST cleanup level for a non-drinking water aquifer. The report also indicated that a geophysical survey of the site had identified several magnetic anomalies. A subsequent Phase I Environmental Assessment Report identified spilled liquid phenolic resin with ready access to a storm drain, drums stored without secondary containment, and the previous report of TPH in ground water as potential environmental concerns at the site. The potential presence of PCBs in fluorescent light ballasts, suspect asbestos-containing materials, and potential lead-based paints on building surfaces were also identified as concerns.

Rock City Paper Box Corporation/Rock-Tenn Company

The **Rock City Paper Box Corporation/Rock-Tenn Company** property located at 1809 Chestnut Street consists of approximately 6.5 acres occupied by a large single-story, high-bay manufacturing and warehouse facility. Historically, operations at the site include Wasson Car Works from 1885 to

1889, Chattanooga Car and Foundry from 1889 to 1937, Star Box and Printing Company from 1937 to 1951, and Rock City Paper Box Corporation from 1972 until early 1996. Rock City Paper Box Corporation, a division of Rock-Tenn Company, manufactured corrugated paper cartons for use by the food packaging industry.

A previous Phase I Environmental Assessment Report identified apparent vent and fill pipes indicating the potential presence of an underground storage tank. Disposal of water soluble glue directly to soil outside of the building at one location was also identified as a potential environmental concern at the site. The potential presence of PCBs in fluorescent light ballasts, suspect asbestos-containing materials, and potential lead-based paints on building surfaces were also identified as concerns.

Ross-Meehan Foundry

The **Ross-Meehan Foundry** is located at 1801 Carter Street. The site is comprised of a 9-acre parcel occupied by a large severely deteriorated structure where the foundry operations formerly occurred. Foundry operations began at the Ross-Meehan site in 1889 and continued under various ownership until closure as a result of bankruptcy in 1986. Ownership of the site was conveyed via Quit-Claim Deed in 1988 to the Kessler Industrial Corporation. The grounds of the site are currently overgrown with vegetation and littered with wood and other building debris.

Previous environmental reports identified several potential environmental concerns, including a 4-acre foundry sand landfill, drums with unknown contents, a transformer dielectric fluid release and nearby oil-stained soil, liquid in several interior sumps, the potential presence of PCBs in fluorescent light ballasts, potential lead-based paints on building surfaces, and suspect asbestos-containing materials. TDEC's Division of Superfund (DSF) completed a Preliminary Assessment (PA) of the site in April 1995. The results of the PA indicated that due to a lack of area ground water users, limited population living around the site, and the containment of surface water run-off, further study of the site under the United States Environmental Protection Agency's (US EPAs) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was not required.

Classic Refinery

The **Classic Refinery** property, located at the northwest corner of the intersection of Carter and 19th Streets, consists of a 0.44-acre parcel which is occupied by a 5-story reinforced concrete structure. Historically, operations conducted at this site include use of the structure from 1927 to 1955 as a transformer house by Chattanooga and Tennessee River Power Company, Tennessee Valley Authority, and Chattanooga Electric Power Board. The site has been used since 1980 by Classic Refinery for extraction, smelting, and distribution of precious metals from integrated circuit boards and dental amalgam.

A previous Phase I Environmental Assessment Report identified the presence of laboratory chemicals and heavy metals associated with the ongoing precious metals extraction operations and previous site use as a transformer house as potential environmental concern at the site. The potential presence of PCBs in fluorescent light ballasts, suspect asbestos-containing materials, and lead-based paints on building surfaces were also identified as concerns.

Chattanooga Electric Power Board

The **Chattanooga Electric Power Board** property, located west of and contiguous to the Classic Refinery property, consists of a fenced 21-foot by 40-foot vacant parcel that formerly contained electrical transformers. Historically, operations conducted at the site include use of the site from 1927 to 1955 by Chattanooga and Tennessee River Power Company (Tennessee Valley Authority [TVA]). The City of Chattanooga acquired the property in 1955 and the Chattanooga Electric Power Board acquired the site in 1966.

A previous Phase I Environmental Assessment Report identified potential environmental concerns at the site, including possible foundry sand and slag disposal from the adjacent Ross-Meehan Foundry and potential PCB contamination due to the historical presence of transformers.

Former City of Chattanooga Property

The former **City of Chattanooga** property located west of and contiguous to the Classic Refinery property consists of a vacant 0.75-acre parcel. Historically, operations conducted at the site include use of the site for undocumented purposes from 1927 to 1955 by Chattanooga and Tennessee River Power Company, TVA, and the Chattanooga Electric Power Board. The City of Chattanooga acquired the property in 1955 and Ross-Meehan Foundry purchased the parcel in 1967. The parcel was developed by Ross-Meehan as an employee parking lot.

A previous Phase I Environmental Assessment Report identified several rain-filled drums and possible foundry sand disposal from the adjacent Ross-Meehan Foundry as potential environmental concerns at the site.

2.0 PROBLEM DEFINITION

The Remedial Investigation of the proposed Chattanooga Stadium properties consisted of drilling soil test borings, advancing geoprobe borings and hand auger borings, sediment sampling, PCB wipe sampling, excavating test trenches to assess magnetic anomalies identified during a previous geophysical survey, test trenches to assess the potential presence of an UST, installing ground water quality monitoring wells, and sampling ground water, and laboratory analyses of soil, sediment, and wipe samples, ground water. Sampling locations are shown on Figure 3.

The results of Remedial Investigation activities at the proposed Chattanooga Stadium site indicated that spent casting sand, sand, furnace slag and cinders, and building demolition debris have been commingled and deposited to a depth of approximately 8 feet across much of the properties. Relatively low concentrations of several volatile organics; numerous semi-volatile organics, most of which included polynuclear aromatic hydrocarbons (PAHs) that are indicative of the residual coal component of spent casting sand; relatively low concentrations of two PCB isomers; and various metals were detected in soil.

Ground water quality was not identified as a significant concern due to the current and historical industrialization of the site area and the limited inter-media transfer of site contaminants from soil to ground water. The area within a 4-mile radius of the proposed stadium site is supplied with potable water by Tennessee American Water Company. There are no known surface water withdrawals for drinking water located downstream of the proposed stadium site on the Tennessee River. The closest downstream public water withdrawal intake is located at South Pittsburg, Tennessee, approximately 30 river miles downstream on the Tennessee River.

Site structures were surveyed concurrent with Remedial Investigation activities to confirm the presence of asbestos-containing building materials. The asbestos survey consisted of a reconnaissance of all site structures to identify suspect asbestos-containing materials, collection of bulk samples of the identified suspect materials, and laboratory analyses of bulk samples using the U.S. Environmental Protection Agency (EPA) recommended method of Polarized Light Microscopy to determine the type and percent of asbestiform mineral present, if any. The results of asbestos surveys indicated the presence of asbestos in building materials at various locations in several site structures. In accordance with applicable Hamilton County Air Pollution Control Bureau, OSHA, and National Emission Standards for Hazardous Air Pollutants regulations, engineering controls will be implemented prior to and during demolition activities to prevent releases of airborne asbestos and ensure proper handling and off-site disposal. Exposure of full-time stadium staff and post-completion recreational users of the stadium facility to airborne asbestos is not a concern because the asbestos will be properly removed from the proposed Chattanooga Stadium site prior to occupancy by those receptors.

Painted surfaces of site structures were tested for the presence of lead-based paint coatings using a portable X-Ray Fluorescence Spectrum Analyzer in accordance with U.S. Department of Housing and Urban Development (HUD) guidelines. In accordance with HUD guidelines for lead-based hazard identification, quality control chip samples of selected paint coatings were analyzed for total lead by Flame Atomic Absorption spectroscopy using U.S. EPA analytical method 6010. Lead-based paint coatings were identified on various components of several site structures. Engineering controls will be implemented by the demolition contractor to minimize exposure to airborne lead-based paint dust. Building components with lead-based paint coatings will be properly disposed off-site or recycled in accordance with applicable local, TDEC Division of Solid Waste Management, and Resource Conservation and Recovery Act regulations. Exposure of stadium staff and post-completion recreational users of the stadium facility to lead-based paint is not a concern because the lead-based paint hazards will be eliminated from the proposed Chattanooga Stadium site prior to occupancy by those receptors.

A reconnaissance of the properties comprising the proposed Chattanooga Stadium site resulted in the identification of 32 pole-supported transformers. No pad-mounted transformers were identified. The Electric Power Board of Chattanooga (EPB) was contacted regarding ownership of the pole-mounted transformers, PCB-content, documentation of past dielectric fluid releases, and any remediation activities for the identified transformer locations. EPB confirmed ownership of the mineral-oil-filled transformers, but indicated that no PCB test data were available. EPB also indicated that they would test the transformers for PCB content as the units are deactivated and removed for disposal prior to construction of the planned stadium. EPB was not aware of any leakage from the identified transformers or any previous PCB clean-up activities at the transformer locations.

Fluorescent light fixtures with ballasts potentially containing PCBs were identified in most site structures. Fluorescent light ballasts will be removed, containerized, and transported off site for proper disposal prior to demolition of site structures.

Approximately 20 drums with unknown contents remain at various locations on the Ross-Meehan site. An environmental contractor has been tentatively selected to secure the drums, determine their contents, and arrange for proper off-site treatment and disposal. All drums and their contents will be removed from the site prior to demolition of site structures.

3.0 PROBLEM DISCUSSION

A study to identify potential human and environmental receptors in the event of possible inter-media contaminant transfer from the proposed Chattanooga Stadium site was performed. The site was found to contain limited, if any, habitat that would be considered suitable for the presence of ecological receptors. In addition, no state- or federal-listed rare, threatened, or endangered species (including plants, birds, and amphibians) were observed at the sites. Consistent with US EPA guidance for conducting ecological risk assessments, the results of the preliminary problem formulation indicated that further ecological risk assessment activities were not warranted.

A focused human health risk assessment was prepared to evaluate whether potential human receptors need to be protected against exposure to soil at the site during excavation/construction activities and after the facility is completed. The potential exposures of interest for the proposed stadium site were ingestion/inhalation of contaminated soil by construction workers and maintenance/utility workers. Exposure of post-completion recreational users of the stadium facility and site were not of interest due to the planned raising of the site elevation, which would create a 1-foot to 4-foot thick horizontal barrier above any site contaminants.

To identify the exposure scenarios to be evaluated and select the constituents of potential concern (COPCs) for risk assessment purposes, maximum detected concentrations were compared with the risk-based concentrations developed by the US EPA Region III. These comparisons indicated that the potential risks due to incidental ingestion of soil and inhalation of fugitive dust should be quantitatively evaluated because the maximum concentrations of 17 detected constituents exceeded the Region III risk-based concentrations (see Table 1). In accordance with the supplemental risk assessment guidance issued by the US EPA Region IV, the COPCs for the site were identified as those chemicals for which the maximum detected concentrations exceeded one-tenth of the US EPA Region III risk-based concentrations for the identified exposure pathways. Toxicity data based on chronic exposure for the COPCs were compiled from the US EPA's Integrated Risk Information Service database (IRIS) and Health Effects Assessment Summary Tables (HEAST).

In order to account for the uncertainties associated with the data and site conditions, the 95 percent upper confidence limit (UCL) of the arithmetic mean of the sample concentrations collected from the soil were used to evaluate exposure and potential risk in the risk assessment. Based upon US EPA guidance, the data was assumed to be lognormally distributed. The 95 percent UCL on the arithmetic mean was calculated by assuming that non-detect values are equal to one-half the sample-specific detection limit for a constituent.

Based upon the proposed construction schedule for the site, an exposure frequency of 250 days (5 days per week for 50 weeks) and an exposure duration of 1 year were used for the construction worker. An exposure frequency of 5 days and an exposure duration of 25 years were used for the maintenance/utility worker.

The toxicity data for the non-carcinogenic effects (RfDs) were used to calculate a hazard quotient (HQ) for each chemical by dividing the exposure or "intake" calculated for the receptor by the appropriate chemical-specific RfD. The toxicity data for the carcinogenic effects (CSFs) were used to calculate risks by multiplying the exposure or "intake" calculated for the receptor by the chemical-specific CSF. The chemical-specific HQs and risks were then summed in order to consider the potential for additive effects. This summation was performed separately for non-carcinogens and carcinogens. The results of the HQ and risk calculations are shown below and presented on Tables 2 through 5.

Potential Receptor	Hazard Index	Cancer Risk
Construction Worker	0.4	4×10^{-6}
Maintenance/Utility Worker	0.0009	2×10^{-7}

Based upon a comparison of these calculated risks with the standard points of departure for risk (HI = 1 and cancer risk between 1×10^{-4} to 1×10^{-6}), the risks to both the construction worker and maintenance/utility worker from exposure to site soil appear to be acceptable.

33-645

2147

4.0 REMEDY SELECTION

The following TDEC-DSF specified evaluation criteria were evaluated in selecting the remedial action alternative for soil at the properties comprising the proposed Chattanooga Stadium site:

- Overall Protection of Human Health and the Environment
- Attainment of Remediation Goals and Compliance with Applicable State and Federal Laws
- Short-Term Effectiveness
- Long-Term Effectiveness
- Permanent Reduction of Toxicity, Mobility, and Volume Through Treatment
- Ease of Implementation
- Cost

Remedial Action Objectives

Based upon the results of the focused risk assessment, the following Remedial Action Objectives (RAOs) specific to soil were identified for the proposed Chattanooga Stadium site:

- Minimize exposure to construction workers and maintenance/utility workers during intrusive activities
- Prevent exposure of future recreational users and facility groundskeepers to COPCs in site soil that could present potentially unacceptable health risks.

Screening of Potential Remedial Action Alternatives

A no-action alternative was evaluated as a baseline for comparison to other alternatives. The no-action alternative was determined not to be effective in the long-term because it did not modify or reduce the potential for future exposure of the facility's recreational users and groundskeepers to hazardous substances, or provide permanent reduction in toxicity, mobility, or volume of hazardous substances.

A horizontal soil barrier alternative was evaluated due to the planned site-wide placement of fill soil to raise the site elevation. This alternative would involve the filling of on-site sumps at the Old Power House and the Ross-Meehan facility, and placement of an approximately 1 to 4-foot thick barrier of clean fill soil over the exposed existing soil surfaces at the site. In several areas of the site, the fill soil will be used to anchor interlocking plastic paving blocks and provide support for grass cover. In other areas, the paving blocks will be omitted in lieu of additional fill soil and a grass cover. All of the grass-covered areas would be used for automobile parking or recreational purposes. Several areas will also be covered by asphalt pavement for facility staff parking.

This horizontal soil barrier alternative would provide overall protection of human health by controlling the potential exposure of the stadium's future recreational users and groundskeepers to contaminants in sumps and site soil. This alternative would also be protective of the environment by reducing possible future intermedia transfers of contaminants.

Although contaminants would remain in site soil, the potential for exposure would be controlled. Selected landfill closure and post-closure requirements would be applicable to ensure long-term effectiveness, including routine inspection and maintenance of the barrier and grass cover. Erosion damage, subsidence, abrasions, or inadequate vegetative cover would require prompt repair. No special techniques, materials, permits, or labor would be required to construct the horizontal barrier. Fill soil would be generated during the excavation for the stadium "bowl" and would also be available locally from off-site sources. Capital costs associated with this alternative are estimated at $0 since construction of the horizontal barrier is an integral part of the planned development of the site. Since annual operations and maintenance costs for maintaining the barrier and vegetative cover will be considered part of routine facility and site activities, no extraordinary costs are anticipated.

5.0 CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

The Resource Conservation and Recovery Act's (RCRA) land disposal restrictions (40 CFR 268) would not be triggered beause the waste-containing soil would not be relocated for disposal elsewhere on or off-site.

33-645

02150

6.0 RECOMMENDED ALTERNATIVE

Based upon a comparative analysis of remedial action alternatives, a Horizontal Soil Barrier has been identified as the most appropriate remedial alternative for the site. We recommend the Horizontal Soil Barrier alternative since it satisfies the remedial action objectives for the site, as well as TDEC-DSF's remedial action evaluation criteria.

7.0 SCHEDULE

Completion of the Horizontal Soil Barrier, including installation of the vegetative cover, would coincide with the planned completion of stadium construction activities in October 1997.

8.0 REFERENCES

EPA, 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3.01

Law, July 17, 1996, Revised Remedial Investigation/Feasibility Study Workplan, Proposed Chattanooga Stadium Properties

Law, August 30, 1996, Report of Focused Remedial Investigation/Feasibility Study, Former Rock-Tenn Site at the Proposed Chattanooga Stadium Properties

Law, October 8, 1996, Report of Remedial Investigation, Proposed Chattanooga Stadium Properties

Law, October 29, 1996, Report of Focused Feasibility for Soil, Proposed Chattanooga Stadium Properties

Table 1: Summary of Constituents of Potential Concern

Chemical	Frequency of Detection	Minimum Detected Concentration	Maximum Detected Concentration	Exposure Point Concentration (a)	Background Concentration	COPC Criteria Concentration (b) Ingestion of Soil	COPC Criteria Concentration (b) Inhalation of Dust
Metals (mg/kg):							
Arsenic	58/58	5.83	43	18.9	8.27	$\boxed{0.38}$	$\boxed{38}$
Beryllium	46/58	0.155	3.90	0.709	0.8	$\boxed{0.13}$	69
Chromium	58/58	9.46	437	64.8	37.6	1,000	$\boxed{14}$
Lead	58/58	13.9	10,400	242	23.9	$\boxed{1{,}000\ (c)}$	–
Mercury	46/58	0.0489	31.35	2.97	0.57	61	$\boxed{0.7}$
Nickel	58/58	0.908	708	110	18.5	4,100	$\boxed{690}$
Semi-Volatile Organic Compounds (µg/kg):							
Anthracene	3/58	684	7,670	990	–	61,000,000	$\boxed{680}$
Benzo(a)anthracene	14/58	484	22,100	1,780	–	$\boxed{780}$	$\boxed{2{,}700}$
Benzo(b)fluoranthene	16/58	445	24,900	2,740	–	$\boxed{780}$	$\boxed{2{,}300}$
Benzo(k)fluoranthene	10/58	245	6,200	1,260	–	7,800	$\boxed{2{,}300}$
Benzo(a)pyrene	15/58	352	16,100	1,850	–	$\boxed{78}$	$\boxed{1{,}100}$
Chrysene	15/58	466	19,400	1,950	–	78,000	$\boxed{360}$
Dibenz(a,h)anthracene	3/58	470	1,300	879	–	$\boxed{78}$	$\boxed{720}$
Fluoranthene	16/58	351	50,300	2,110	–	8,200,000	$\boxed{6{,}800}$
Indeno(1,2,3-cd)pyrene	10/58	489	7,140	1,410	–	$\boxed{780}$	28,000
Pyrene	15/58	656	40,300	2,420	–	6,100,000	$\boxed{5{,}600}$
PCBs (µg/kg):							
Arochlor-1260	20/58	14.1	9,670	316	–	$\boxed{74}$	–

Notes:
Boxed values indicate that the maximum detected concentration exceeds criterion (i.e., Region III risk-based concentration divided by 10)

(a) Exposure point concentration is the lesser of the 95% upper confidence limit or the maximum detected concentration
(b) Region III risk-based concentrations divided by 10 (per Region IV guidance) (USEPA, 1996a; USEPA, 1995a)
(c) Criterion for industrial/occupational adults (USEPA, 1989c)

– Not available
COPC Constituent of potential concern

Prepared/Date: MTS 9/26/96
Checked/Date: MJA 9/27/96

33-645

02154

Table 2: Calculations of Risk to Soil: Future Construction Workers Exposure - Incidental Ingestion of Soil

Parameter	Exposure Point Concentration (mg/kg)	Exposure Value Type (a)	Intake Factor (kg/kg-d) Noncarc. (Adult)	Intake Factor (kg/kg-d) Carcinogen (Lifetime)	Lifetime Intake (mg/kg-d) (b) Noncarc. (Adult)	Lifetime Intake (mg/kg-d) (b) Carcinogen (Lifetime)	Toxicity Values Oral RfD (mg/kg-d)	Toxicity Values Slope Factor (kg-d/mg)	Adult Hazard Quotient (c) (unitless)	Excess Cancer Risk (d) (unitless)
METALS:										
Arsenic	18.9	ucl	4.70E-06	6.71E-08	8.88E-05	1.27E-06	3.00E-04	1.50E+00	2.96E-01	1.90E-06
Beryllium	0.709	ucl	4.70E-06	6.71E-08	3.33E-06	4.76E-08	5.00E-03	4.30E+00	6.66E-04	2.05E-07
Chromium	64.8	ucl	4.70E-06	6.71E-08	3.05E-04	4.35E-06	5.00E-03	NA	6.09E-02	NA
Lead	242	ucl	4.70E-06	6.71E-08	1.14E-03	1.62E-05	NA	NA	NA	NA
Mercury	2.97	ucl	4.70E-06	6.71E-08	1.40E-05	1.99E-07	3.00E-04	NA	4.65E-02	NA
Nickel	110	ucl	4.70E-06	6.71E-08	5.17E-04	7.38E-06	2.00E-02	NA	2.59E-02	NA
SEMI-VOLATILE ORGANIC COMPOUNDS:										
Anthracene	0.99	ucl	4.70E-06	6.71E-08	4.65E-06	6.64E-08	3.00E-01	NA	1.55E-05	NA
Benzo(a)anthracene	1.78	ucl	4.70E-06	6.71E-08	8.37E-06	1.19E-07	NA	7.30E-01	NA	8.72E-08
Benzo(b)fluoranthene	2.74	ucl	4.70E-06	6.71E-08	1.29E-05	1.84E-07	NA	7.30E-01	NA	1.34E-07
Benzo(k)fluoranthene	1.26	ucl	4.70E-06	6.71E-08	5.92E-06	8.45E-08	NA	7.30E-02	NA	6.17E-09
Benzo(a)pyrene	1.85	ucl	4.70E-06	6.71E-08	8.70E-06	1.24E-07	NA	7.30E+00	NA	9.06E-07
Chrysene	1.95	ucl	4.70E-06	6.71E-08	9.17E-06	1.31E-07	NA	7.30E-03	NA	9.55E-10
Dibenz(a,h)anthracene	0.879	ucl	4.70E-06	6.71E-08	4.13E-06	5.90E-08	NA	7.30E+00	NA	4.31E-07
Fluoranthene	2.11	ucl	4.70E-06	6.71E-08	9.92E-06	1.42E-07	4.00E-02	NA	2.48E-04	NA
Indeno(1,2,3-cd)pyrene	1.41	ucl	4.70E-06	6.71E-08	6.63E-06	9.46E-08	NA	7.30E-01	NA	6.91E-08
Pyrene	2.42	ucl	4.70E-06	6.71E-08	1.14E-05	1.62E-07	3.00E-02	NA	3.79E-04	NA
PCBs:										
Arochlor-1260	0.32	ucl	4.70E-06	6.71E-08	1.49E-06	2.12E-08	NA	7.70E+00	NA	1.63E-07
								TOTAL:	0.4	4E-06

NA Not available or applicable
(a) "ucl" refers to the upper confidence limit, "max" refers to the maximum detected concentration
(b) Lifetime Intake = Exposure Point Concentration * Intake Factor
(c) Hazard Quotient (Noncarcinogens) = Lifetime Intake/RfD
(d) Excess Cancer Risk (Carcinogens) = Slope Factor * Lifetime Intake

Prepared/Date: MJA 9/26/96
Checked/Date: MTS 9/27/96

33-645

Table 3: Calculations of Risk to Soil: Future Construction Exposure - Inhalation of Fugitive Dust

Parameter	Exposure Point Concentration (mg/kg)	Exposure Value Type (a)	Intake Factor (kg/kg-d) Noncarc. (Adult)	Intake Factor (kg/kg-d) Carcinogen (Lifetime)	Lifetime Intake (mg/kg-d) (b) Noncarc. (Adult)	Lifetime Intake (mg/kg-d) (b) Carcinogen (Lifetime)	Toxicity Values Inhalation RfD (mg/kg-d)	Toxicity Values Slope Factor (kg-d/mg)	Adult Hazard Quotient (c) (unitless)	Excess Cancer Risk (d) (unitless)
METALS:										
Arsenic	18.9	ucl	4.23E-11	6.04E-13	7.99E-10	1.14E-11	NA	1.51E+01	NA	1.72E-10
Beryllium	0.709	ucl	4.23E-11	6.04E-13	3.00E-11	4.28E-13	NA	8.40E+00	NA	3.60E-12
Chromium	64.8	ucl	4.23E-11	6.04E-13	2.74E-09	3.91E-11	NA	4.20E+01	NA	1.64E-09
Lead	242	ucl	4.23E-11	6.04E-13	1.02E-08	1.46E-10	NA	NA	NA	NA
Mercury	2.97	ucl	4.23E-11	6.04E-13	1.26E-10	1.79E-12	8.57E-05	NA	1.47E-06	NA
Nickel	110	ucl	4.23E-11	6.04E-13	4.65E-09	6.64E-11	NA	8.40E-01	NA	5.58E-11
SEMI-VOLATILE ORGANIC COMPOUNDS:										
Anthracene	0.99	ucl	4.23E-11	6.04E-13	4.19E-11	5.98E-13	NA	NA	NA	NA
Benzo(a)anthracene	1.78	ucl	4.23E-11	6.04E-13	7.53E-11	1.08E-12	NA	6.10E-01	NA	6.56E-13
Benzo(b)fluoranthene	2.74	ucl	4.23E-11	6.04E-13	1.16E-10	1.65E-12	NA	6.10E-01	NA	1.01E-12
Benzo(k)flouranthene	1.26	ucl	4.23E-11	6.04E-13	5.33E-11	7.61E-13	NA	6.10E-02	NA	4.64E-14
Benzo(a)pyrene	1.85	ucl	4.23E-11	6.04E-13	7.83E-11	1.12E-12	NA	6.10E+00	NA	6.82E-12
Chrysene	1.95	ucl	4.23E-11	6.04E-13	8.25E-11	1.18E-12	NA	6.10E-03	NA	7.18E-15
Dibenz(a,h)anthracene	0.879	ucl	4.23E-11	6.04E-13	3.72E-11	5.31E-13	NA	6.10E+00	NA	3.24E-12
Fluoranthene	2.11	ucl	4.23E-11	6.04E-13	8.93E-11	1.27E-12	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.41	ucl	4.23E-11	6.04E-13	5.96E-11	8.52E-13	NA	6.10E-01	NA	5.20E-13
Pyrene	2.42	ucl	4.23E-11	6.04E-13	1.02E-10	1.46E-12	NA	NA	NA	NA
PCBs:										
Arochlor-1260	0.32	ucl	4.23E-11	6.04E-13	1.34E-11	1.91E-13	NA	NA	NA	NA
								TOTAL:	0.000001	2E-09

NA Not available or applicable
(a) "ucl" refers to the upper confidence limit, "max" refers to the maximum detected concentration
(b) Lifetime Intake = Exposure Point Concentration * Intake Factor
(c) Hazard Quotient (Noncarcinogens) = Lifetime Intake/RfD
(d) Excess Cancer Risk (Carcinogens) = Slope Factor * Lifetime Intake

Prepared/Date: MJA 9/26/96
Checked/Date: MTS 9/27/96

02156

33-645

Table 4: Calculations of Risk to Soil: Future Maintenance/Utility Worker Exposure - Incidnetal Ingestion of Soil

Parameter	Exposure Point Concentration (mg/kg)	Exposure Value Type (a)	Intake Factor (kg/kg-d) Noncarc. (Adult)	Intake Factor (kg/kg-d) Carcinogen (Lifetime)	Lifetime Intake (mg/kg-d) (b) Noncarc. (Adult)	Lifetime Intake (mg/kg-d) (b) Carcinogen (Lifetime)	Toxicity Values Oral RfD (mg/kg-d)	Toxicity Values Slope Factor (kg-d/mg)	Adult Hazard Quotient (c) (unitless)	Excess Cancer Risk (d) (unitless)
METALS:										
Arsenic	18.9	ucl	9.78E-09	3.49E-09	1.85E-07	6.60E-08	3.00E-04	1.50E+00	6.16E-04	9.89E-08
Beryllium	0.709	ucl	9.78E-09	3.49E-09	6.93E-09	2.47E-09	5.00E-03	4.30E+00	1.39E-06	1.06E-08
Chromium	64.8	ucl	9.78E-09	3.49E-09	6.34E-07	2.26E-07	5.00E-03	NA	1.27E-04	NA
Lead	242	ucl	9.78E-09	3.49E-09	2.37E-06	8.45E-07	NA	NA	NA	NA
Mercury	2.97	ucl	9.78E-09	3.49E-09	2.90E-08	1.04E-08	3.00E-04	NA	9.68E-05	NA
Nickel	110	ucl	9.78E-09	3.49E-09	1.08E-06	3.84E-07	2.00E-02	NA	5.38E-05	NA
SEMI-VOLATILE ORGANIC COMPOUNDS:										
Anthracene	0.99	ucl	9.78E-09	3.49E-09	9.68E-09	3.46E-09	3.00E-01	NA	3.23E-08	NA
Benzo(a)anthracene	1.78	ucl	9.78E-09	3.49E-09	1.74E-08	6.21E-09	NA	7.30E-01	NA	4.53E-09
Benzo(b)fluoranthene	2.74	ucl	9.78E-09	3.49E-09	2.68E-08	9.56E-09	NA	7.30E-01	NA	6.98E-09
Benzo(k)fluoranthene	1.26	ucl	9.78E-09	3.49E-09	1.23E-08	4.40E-09	NA	7.30E-02	NA	3.21E-10
Benzo(a)pyrene	1.85	ucl	9.78E-09	3.49E-09	1.81E-08	6.46E-09	NA	7.30E+00	NA	4.71E-08
Chrysene	1.95	ucl	9.78E-09	3.49E-09	1.91E-08	6.81E-09	NA	7.30E-03	NA	4.97E-11
Dibenz(a,h)anthracene	0.879	ucl	9.78E-09	3.49E-09	8.60E-09	3.07E-09	NA	7.30E+00	NA	2.24E-08
Fluoranthene	2.11	ucl	9.78E-09	3.49E-09	2.06E-08	7.36E-09	4.00E-02	NA	5.16E-07	NA
Indeno(1,2,3-cd)pyrene	1.41	ucl	9.78E-09	3.49E-09	1.38E-08	4.92E-09	NA	7.30E-01	NA	3.59E-09
Pyrene	2.42	ucl	9.78E-09	3.49E-09	2.37E-08	8.45E-09	3.00E-02	NA	7.89E-07	NA
PCBs:										
Arochlor-1260	0.32	ucl	9.78E-09	3.49E-09	3.09E-09	1.10E-09	NA	7.70E+00	NA	8.49E-09
								TOTAL:	0.0009	2E-07

NA Not available or applicable
(a) "ucl" refers to the upper confidence limit, "max" refers to the maximum detected concentration
(b) Lifetime Intake = Exposure Point Concentration * Intake Factor
(c) Hazard Quotient (Noncarcinogens) = Lifetime Intake/RfD
(d) Excess Cancer Risk (Carcinogens) = Slope Factor * Lifetime Intake

Prepared/Date: MJA 9/26/96
Checked/Date: MTS 9/27/96

02157

33-645

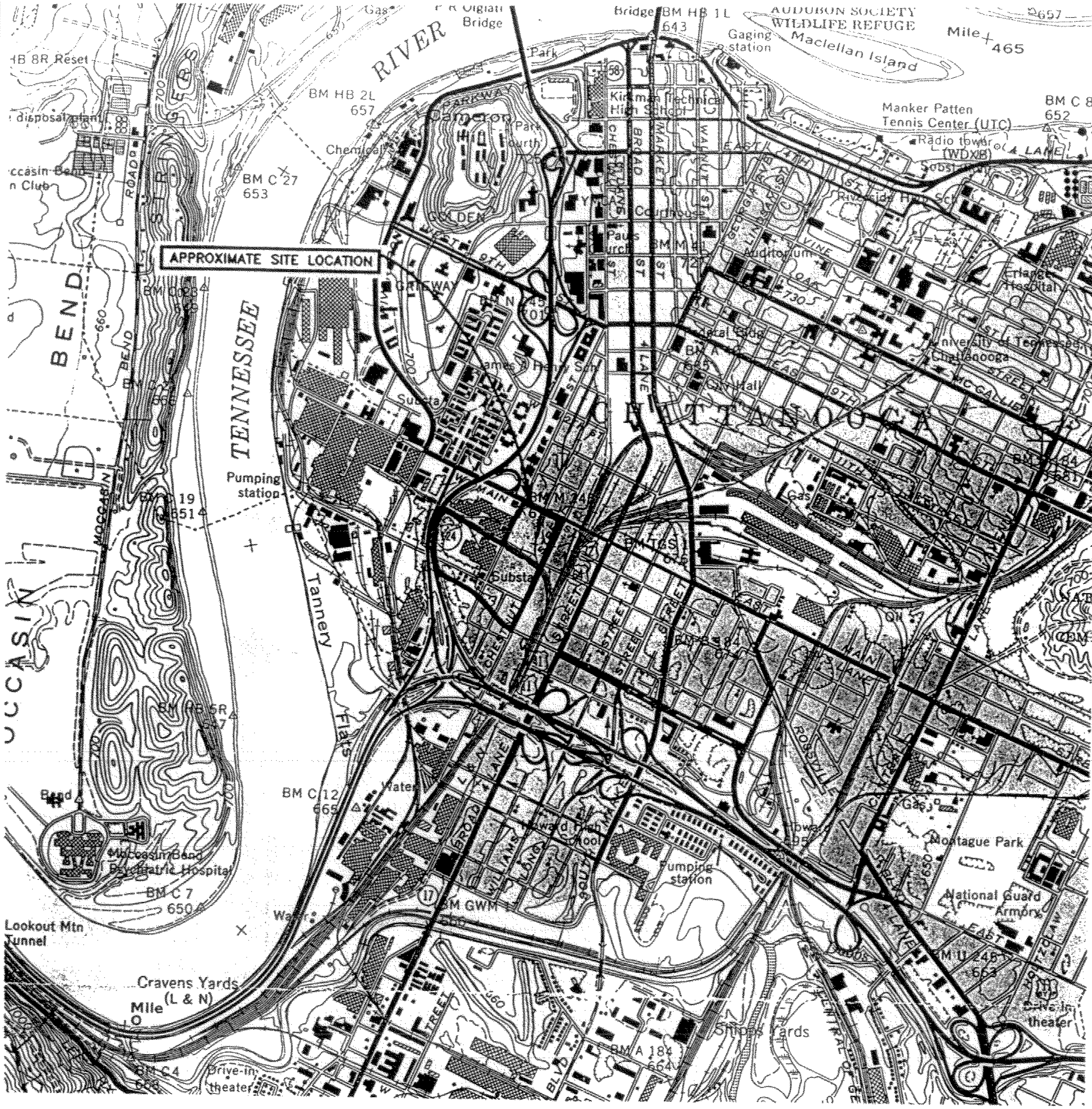
Table 5: Calculations of Risk to Soil: Future Mainatenance/Utility Worker Exposure - Insalation of Fugitive Dust

Parameter	Exposure Point Concentration (mg/kg)	Exposure Value Type (a)	Intake Factor (kg/kg-d) Noncarc. (Adult)	Intake Factor (kg/kg-d) Carcinogen (Lifetime)	Lifetime Intake (mg/kg-d) (b) Noncarc. (Adult)	Lifetime Intake (mg/kg-d) (b) Carcinogen (Lifetime)	Toxicity Values Inhalation RfD (mg/kg-d)	Toxicity Values Slope Factor (kg-d/mg)	Adult Hazard Quotient (c) (unitless)	Excess Cancer Risk (d) (unitless)
METALS:										
Arsenic	18.9	ucl	8.45E-13	3.02E-13	1.60E-11	5.71E-12	NA	1.51E+01	NA	8.62E-11
Beryllium	0.709	ucl	8.45E-13	3.02E-13	5.99E-13	2.14E-13	NA	8.40E+00	NA	1.80E-12
Chromium	64.8	ucl	8.45E-13	3.02E-13	5.48E-11	1.96E-11	NA	4.20E+01	NA	8.22E-10
Lead	242	ucl	8.45E-13	3.02E-13	2.04E-10	7.31E-11	NA	NA	NA	NA
Mercury	2.97	ucl	8.45E-13	3.02E-13	2.51E-12	8.97E-13	8.57E-05	NA	2.93E-08	NA
Nickel	110	ucl	8.45E-13	3.02E-13	9.30E-11	3.32E-11	NA	8.40E-01	NA	2.79E-11
SEMI-VOLATILE ORGANIC COMPOUNDS:										
Anthracene	0.99	ucl	8.45E-13	3.02E-13	8.37E-13	2.99E-13	NA	NA	NA	NA
Benzo(a)anthracene	1.78	ucl	8.45E-13	3.02E-13	1.50E-12	5.38E-13	NA	6.10E-01	NA	3.28E-13
Benzo(b)fluoranthene	2.74	ucl	8.45E-13	3.02E-13	2.32E-12	8.27E-13	NA	6.10E-01	NA	5.05E-13
Benzo(k)flouranthene	1.26	ucl	8.45E-13	3.02E-13	1.06E-12	3.81E-13	NA	6.10E-02	NA	2.32E-14
Benzo(a)pyrene	1.85	ucl	8.45E-13	3.02E-13	1.56E-12	5.59E-13	NA	6.10E+00	NA	3.41E-12
Chrysene	1.95	ucl	8.45E-13	3.02E-13	1.65E-12	5.89E-13	NA	6.10E-03	NA	3.59E-15
Dibenz(a,h)anthracene	0.879	ucl	8.45E-13	3.02E-13	7.43E-13	2.65E-13	NA	6.10E+00	NA	1.62E-12
Fluoranthene	2.11	ucl	8.45E-13	3.02E-13	1.78E-12	6.37E-13	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.41	ucl	8.45E-13	3.02E-13	1.19E-12	4.26E-13	NA	6.10E-01	NA	2.60E-13
Pyrene	2.42	ucl	8.45E-13	3.02E-13	2.04E-12	7.31E-13	NA	NA	NA	NA
PCBs:										
Arochlor-1260	0.32	ucl	8.45E-13	3.02E-13	2.67E-13	9.54E-14	NA	NA	NA	NA
								TOTAL:	3E-08	9E-10

NA Not available or applicable
(a) "ucl" refers to the upper confidence limit, "max" refers to the maximum detected concentration
(b) Lifetime Intake = Exposure Point Concentration * Intake Factor
(c) Hazard Quotient (Noncarcinogens) = Lifetime Intake/RfD
(d) Excess Cancer Risk (Carcinogens) = Slope Factor * Lifetime Intake

Prepared/Date: MJA 9/26/96
Checked/Date: MTS 9/27/96

02158



SITE VICINITY MAP

N

0 2000 4000
SCALE FEET

SOURCE: U.S.G.S. TOPOGRAPHIC MAP CHATTANOOGA QUADRANGLE, TENNESSEE; DATED 1969 AND PHOTOREVISED 1976.

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES
LAW ENGINEERING, INC.
445 METROPLEX DRIVE NASHVILLE, TN 37211
OFFICE 615-832-0513 FAX 615-832-0983

PROPOSED CHATTANOOGA STADIUM SITES

PREPARED FOR:
THE STADIUM CORPORATION

DRAWN BY: L. BOURG	DATE: 05/23/96
APPROVED BY:	DATE:
PROJECT NO. 50417-6-0025.01	
FIGURE NO. 1	

50417\0025-01

33-645
ROSS MEHAN FOUNDRY

MAP LOCATED IN FILE IN FILE ROOM

PLEASE SEE DIVISION REPRESENTATIVE TO OBTAIN MAP

33-645 02160

entered

33-64521

6/21/96

Reference No. 47
Southside Chattanooga Lead Site
EPA ID No.: TNN000410686

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

IN THE MATTER OF:	)	**DIVISION OF SUPERFUND**
ROSS-MEHAN FOUNDRY	)	
	)	
	)	**SITE NUMBER 33-645**
	)	

CONSENT ORDER AND AGREEMENT

This Consent Order and Agreement is made and entered into by and between the Tennessee Department of Environment and Conservation (hereinafter "Department") and The Stadium Corporation for the purpose of facilitating the investigation, removal and remediation of a certain hazardous substance site.

PARTIES

I.

Justin P. Wilson is the duly appointed Commissioner of the Department. Clinton W. Willer has been delegated the authority to enter into Consent Orders and Agreements.

II.

The Stadium Corporation (hereinafter the "Respondent") is a corporation organized under and existing by virtue of the laws of the State of Tennessee, with its principal office at

33-645

00051

1002 James Building, 735 Broad Street, Chattanooga, Tennessee, and duly domesticated in the State of Tennessee. Its agent for service of process is Mr. Gary Lander.

JURISDICTION

III.

Pursuant to Tennessee Code Annotated § 68-212-201 *et seq.*, the Commissioner is authorized to enter into a Consent Order and Agreement (hereinafter "Order") with a party who is willing and able to conduct an investigation and cleanup of an inactive hazardous substance site.

IV.

The Site, hereinafter described is an inactive hazardous substance site within the meaning of Tennessee Code Annotated § 68-12-202(3), which defines a "hazardous substance site" to mean any site or area where hazardous substance disposal has occurred.

PROPERTY HISTORY

The properties comprising the Site include Rock City Paper Box Corporation/Rock-Tenn Company, ABB-CE Harriman, Kessler Industrial Corporation/Casting Materials Company, Dennie Townsom/Daniel Moving and Storage, a vacant property reportedly owned by the City of Chattanooga, a small parcel owned by the

Chattanooga Electric Power Board, Classic Refinery, and the Ross-Mehan Foundry. The properties have been occupied by various industrial activities since the late 1800s.

The **Ross-Mehan Foundry** is located at 1801 Carter Street. The site is comprised of an approximately 9-acre parcel occupied by a large severely deteriorated structure where the foundry operations formerly occurred. Foundry operations began at the Ross-Mehan site in 1889 and continued under various ownership until closure as a result of bankruptcy in 1986. Kessler Industrial Corporation obtained ownership by quitclaim deed in 1988.

The **Rock City Paper Box Corporation/Rock-Tenn** property located at 1809 Chestnut Street consists of approximately 6.5 acres occupied by a large single-story, high-bay manufacturing/ warehouse facility. Historically, ownership of the site includes Wasson Car Works in 1885, Chattanooga Car and Foundry in 1889, Star Box and Printing Company from 1937 to 1951, and Rock City Paper Box Corporation from 1972 until early 1996. Rock City Paper Box Corporation, a division of Rock-Tenn Company, manufactured corrugated paper cartons for use by the food packaging industry.

The **Daniel Moving and Storage** property is located at the corner of Main Street and Chestnut Street. The property consists of a 1.5 acre parcel occupied by two single-story structures. Tenants at the property include Daniel Moving and Storage and American Truck Equipment. Historically, operations conducted at the site include Enterprise Machine Works and Trucal

& Printer Machine Company in the late 1880s, Chattanooga Plow Company until 1935, International Harvester Company from 1935 to 1959, and various motor vehicle service and repair facilities from 1948 to the present.

The **ABB-CE** property located at the southeast corner of Main and Carter Streets consists of approximately 4 acres occupied by two four-story structures and an asphalt-paved parking apron. Historically, operations conducted at the site include Chattanooga Plow Company from the mid to late 1800s until 1935, International Harvester Company from 1935 to 1948, Harriman Manufacturing Company from 1948 until 1974, and ABB-Combustion Engineering from 1974 to the present.

The **Casting Materials Company** property located at 1610 carter Street consists of approximately 1.7 acres occupied by a large single-story structure, several smaller ancillary storage structures, and an asphalt-paved apron. Historically, operations conducted at the site include Chattanooga Plow Company from the mid to late 1800s until 1935, International Harvester Company from 1935 to 1948, Harriman Manufacturing Company from 1948 until 1974, ABB-Combustion Engineering from 1974 to 1975, Ross-Meehan Foundries from 1975 until 1988, and Kessler Industrial Corporation from 1988 until present.

The **Classic Refinery** property located at the northwest corner of the intersection of Carter and 19th Streets consists of a 0.44 acre parcel occupied by a five-story reinforced concrete structure. Historically, operations conducted at the site include use of the structure from 1927 to 1955 as a transformer house by Chattanooga and Tennessee River Power Company, Tennessee Valley Authority, and Chattanooga Electric Power Board. The site has been used by Classic Refinery since 1980 for extraction, smelting, and distribution of precious metals from integrated circuit boards and dental amalgam.

The City of Chattanooga property located at the west of and contiguous to the Classic Refinery property consists of a vacant 0.75 acre parcel. Historically, operations conducted at the site include use of the site from 1927 to 1955 by Chattanooga and Tennessee River Power Company, Tennessee Valley Authority, and Chattanooga Electric Power Board. The City of Chattanooga acquired the property in 1955.

The Chattanooga Electric Power Board property, located at the west of and contiguous to the Classic Refinery property, consists of a vacant 21-foot by 40-foot parcel that formerly contained transformers.

The Stadium Corporation. On December 28, 1994, a not-for-profit corporation was formed for the purpose of facilitating the construction and operation of a civic sports stadium complex which is to be located on the aforementioned properties. The choice of location for the sports stadium represents a deliberate attempt by the organizers of this project to revitalize a neglected section of the city and to create jobs and boost the economy of Chattanooga's urban landscape. The Stadium Project as it has come to be known, is part of a larger plan the objective of which is to repopulate the largely abandoned industrial sites south of the City of Chattanooga with viable economically and environmentally sustainable development. The Respondent will construct the stadium for the Chattanooga and Hamilton County governments and will then operate and manage the stadium facilities on their behalf. The Respondent was formed and organized for the purpose of undertaking these activities. The Respondent has no ownership interest in, control over operations at, or other involvement with the industrial activities that have historically taken place on the subject properties, nor does the Respondent currently have any ownership interests in the subject properties and its control over operations will be limited to the parameters of this agreement.

ORDER

V.

WHEREFORE, PREMISES CONSIDERED, the Parties stipulate and agree as follows:

A. Effective immediately. except as otherwise required by this ORDER, neither the hazardous substance site nor any hazardous substance on or in it shall be disturbed, moved or removed except by mutual agreement between the parties.

33-645 00057

B. REMEDIAL INVESTIGATION/FEASIBILITY STUDY

1. Within sixty (60) days of the effective date of this ORDER, the Respondent shall submit to the Department all site background information including, but not limited to, results of previous investigations and other pertinent information required by Rule 1200-1-13-.09(2)(a)1. Following the evaluation of this information, an assessment conference will be scheduled.

2. The Respondent may submit To the Department recommendations for interim actions as set out in Rule 1200-1-13-.09(2)(a). Any recommended interim actions approved by the Department shall be implemented by the Respondent.

3. The Respondent shall perform a Remedial Investigation and Feasibility Study (RI/FS) which complies with Department Rule 1200-1-13-.09 and, to the extent reasonable and practicable, EPA's Guidance Document for Conducting RI/FS (Interim Final), EPA 540/G-89/004. The Remedial Investigation and Feasibility Study shall be performed by the Respondent according to a mutually agreed upon schedule. This schedule shall be reduced to writing, signed on behalf of

the Department and the Respondent, and appended to this ORDER. This appended schedule shall become an enforceable part of this ORDER. If the Department requests further information, evaluation, or investigation prior to approval of the Remedial Investigation Report or Feasibility Study, then the Respondent shall perform the additional activities and submit the requested information or results according a mutually agreed upon schedule and in the format requested by the Department.

4. The Respondent shall submit and implement a public participation program outlining the community relations activities proposed to be performed by the Respondent. Public participation activities will consist of a minimum of two activities: public notices when the site enters the program and a second public notice prior to the Department's finalization of The Record of Decision (ROD). Each public notice shall be placed in a newspaper by the Respondent after Department approval of the wording of the public notice, the newspaper(s) selected for the publishing of the notices and the proposed wording, newspaper name(s) and publication date(s) for the second public notice within thirty (30)

days of submittal of the Feasibility Study to the Department. The second public notice shall provide the public with the opportunity to request a public meeting and/or provide comments on the Remedial Alternatives. The comment period for the Remedial Alternatives will continue for at least thirty (30) days after the date of the public notice or public meeting, whichever is later. All comments should be received by the Department initially, not the Respondent, the Department will then forward copies to the Respondent. The Respondent shall forward a copy of the actual notice, as received from the newspaper(s) to the Department. Any additional public notice or community relations activities to be performed by the Respondent shall be established through mutual agreement between the Respondent and the Department. The Department may perform any additional public notice, public meeting, or community relations it deems appropriate for the Site. However, except in an emergency, the Department will provide the Respondent with at least ten (10) days advance notice of any additional community relations activities.

C. DECISION PROCESS FOR CLEANUP ACTIVITIES

1. The Respondent shall submit to the Department all information that is obtained during implementation of the remedial activities specified above. Following evaluation of this information, an assessment conference will be scheduled which the Respondent shall attend. The Respondent will be given at least seven (7) days notice prior to this conference. The purpose of this conference will be to discuss existing data and the need for any further investigation, remedial action, removal action, and/or long term monitoring and maintenance. If the Parties mutually agree that the Respondent should proceed with any further investigation, remedial action, removal action, and/or long term monitoring and maintenance, this agreement shall be documented in writing, shall be signed on behalf of the Department and the Respondent, and shall be appended to this ORDER. Any such appended agreement shall become an enforceable part of this ORDER; however, if any term or condition of any such appended agreement conflicts with any term or condition of the main body of this ORDER, the main body of this ORDER shall control and the contradictory portions of the appended agreement shall be null and void.

2. Following the implementation of any appended agreement, the Department may schedule an assessment conference that the Respondent shall attend. The Respondent will be given at least seven (7) days notice prior to this conference. If the Parties mutually agree that the Respondent should proceed with any further investigation, remedial action, interim action, and/or long term monitoring and maintenance, this agreement shall be reduced to writing, shall be signed on behalf of the Department and the Respondent, and shall be appended to this ORDER. Any such appended agreement shall become an enforceable part of this ORDER; however, if any term or condition of any such appended agreement conflicts with any term or condition of the main body of this ORDER, the main body of this ORDER shall control and the contradictory portions of the appended agreement shall be null and void.

D. REQUESTS FOR TIME EXTENSIONS

The Respondent may request a time extension for any deadline included in this ORDER prior to the deadline. The time extension may be granted through mutual consent for good cause shown. Any mutual agreement to extend a deadline shall be documented in writing, shall be signed on behalf of the Department and the Respondent, and shall be appended to this ORDER.

E. REMOVAL ACTION

If it becomes apparent at any point during the development or execution of any remedial activity, that an interim removal of hazardous substance is necessary to abate a potential threat to health, safety or the environment, this action will be allowed through mutual consent and scheduling. This ORDER does not limit, abrogate, or otherwise affect the authority of the Commissioner to abate an imminent and substantial danger.

F. SUBMISSION OF WASTE REMOVAL REPORTS

Prior to August 1st of each year, the Respondent shall supply the Department with a report that includes the site name, site number, and the following information for both the previous fiscal years (July 1 to June 30) and project cumulative:

a. Name and amount (in KG) of each hazardous substance or hazardous substance containing material (e.g. soil) removed from the site;

b. Pre- and post-treatment concentrations (if treatment occurs on-site);

c. Volume of material treated on-site;

33-645 00063

d. Cost of implementation of this ORDER with separate breakouts for investigation costs, treatment costs, disposal costs, and lab costs.

G. OVERSIGHT AND ASSISTANCE COST

The Respondent shall pay all costs associated with the Department's oversight of and assistance in the implementation of this ORDER. Assistance includes, but is not limited to, the Commissioner's exercise of his authority under Tennessee Code Annotated § 68-212-206(a). Oversight cost shall include, but not be limited to, mileage, lab expense, the current hourly rate and benefits for the Department's employees actively employed in oversight of work under this ORDER, including preparation for and attendance at meetings, and the current State overhead rate, and costs billed by State contractor(s) who are actively performing oversight. The Department shall provide the Respondent with quarterly statements reflecting oversight costs posted during the previous quarter. Tennessee Code Annotated Section § 68-212-224 requires a fee of FIVE THOUSAND ($5,000.00) DOLLARS to enroll in the Voluntary Cleanup Oversight and Assistance Program. ~~Oversight costs posted as of ______________, 1996 equals $______________~~. To cover ~~costs incurred to date and~~ the participation fee, the Respondent shall submit a check made payable to the State of Tennessee for $5,000.00. This check must accompany this

33-645 00064

ORDER when it is signed on behalf of the Respondence and returned to the Department.

H. DISPUTE RESOLUTION

The Department and the Respondent shall use their best effort to resolve any disputes that may arise under this ORDER informally and in good faith. If a disagreement cannot be resolved informally, the parties jointly or individually may pursue the matter formally by requesting a Declaratory Ruling by the Tennessee Solid Waste Disposal Control Board.

I. SITE ACCESS

During the effective period of this ORDER, and until certification by the Department of completion of all activities under this ORDER, the Department and its representatives or designees shall have access during normal business hours and, upon reasonable notice, at non-business hours, to the Site, or any location where characterization or remediation has been, is, or will be conducted, pursuant to this ORDER. Such access may be for the purpose of monitoring activities; verifying data; conducting investigation; inspecting and copying records, logs or other documents that are not subject to a legally applicable privilege; and conducting other activities associated with the implementation of this ORDER. Nothing herein shall limit or otherwise affect the Department's right of entry, pursuant to any applicable statute, regulation or permit. The Department and its representative shall comply with all reasonable health and safety plans published by the Respondent or its contractor and used by Site personnel for the purpose of protecting life and property. If the safety plans are not included in the applicable Work Plan, they shall be provided to the Department prior to the commencement of Work Plan activities at the Site pursuant to this ORDER.

J. ASSESSMENT CONFERENCES

At any time deemed necessary by the Department, the Department may schedule an assessment conference that the Respondent shall attend. The Respondent shall be given notice of any such conference, in writing, at least seven (7) days prior to the meeting. If the Parties mutually agree that the Respondent should proceed with further investigation, remedial action, interim action, and/or long term monitoring and maintenance, this agreement shall be reduced to writing, shall be signed on behalf of the Department and the Respondent, and shall be appended to this ORDER. Any such appended agreement shall become an enforceable part of this ORDER; however, if any terms or conditions of any such appended agreement conflicts with any term or condition of the main body of this ORDER, the main body of this ORDER shall control and the contradictory portions of the appended agreement shall be null and void.

K. NCP REQUIREMENTS

To the extent practicable, any investigation, identification, containment cleanup action, including monitoring and maintenance, performed under this ORDER, shall be consistent with the National Contingency Plan (NCP) promulgated pursuant to Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended, (Public Law 96-510).

L. SUBMISSION OF INFORMATION, REPORTS, OR STUDIES

Any information, reports, or studies submitted under the terms of this ORDER shall contain the following notarized statement:

I certify under penalty of law, including but not limited to penalties for perjury, that the information contained in this document and on any attachment is true, accurate and complete to the best of my knowledge, information and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for intentional violation.

33-645

00067

M. LETTER OF COMPLETION

Upon completion of all tasks set forth in this ORDER, the Department shall issue to the Respondent a letter stating the requirements of this ORDER have been fulfilled and no further action of the Respondent is required under this ORDER.

N. RESERVATION OF RIGHTS

1. This ORDER shall not be construed as waiving any right or authority available to the Commissioner to assess the Respondent for liability for civil penalties or damages incurred by the State. The right to order further investigation, remedial action, and/or monitoring and maintenance is also specifically reserved. Further, this ORDER shall not be construed as waiving, settling, or in any manner compromising any natural resource damage claims which the Department of the State of Tennessee may have under Section 107 of CERCLA or any other statute, rule, regulation or common law.

2. This ORDER shall not be construed as an admission or evidence of any liability and shall not be used for any purpose or in any judicial or administrative proceeding except for a proceeding

brought by either party to enforce the terms and conditions hereof. Nothing in this ORDER shall be interpreted as limiting the Respondent's right to preserve the confidentiality of attorney work product or client-attorney communication. T.C.A. § 68-212-202 et seq. contains no provisions for confidentiality or proprietary information. Therefore, records, reports, test results, or other information submitted to the Department under this ORDER shall be subject to public review. Any and all records, reports, test results or other information relating to an inactive hazardous substance site or the possible hazardous substance at the Site submitted under this ORDER may be used by the Department for all purposes set forth in T.C.A. § 68-212-201 et seq.

O. WAIVER OF RIGHT TO APPEAL

The Respondent understands that it has the right to appeal an ORDER pursuant to Tennessee Code Annotated §§ 68-212-215 and 4-5-301 et seq. The Respondent knowingly and voluntarily waives this right in so far as it applies to this ORDER.

00069

33-645

The individual signing below on behalf of the Respondent Corporation represents that he is a duly authorized agent, capable of entering into a binding ORDER on behalf of the corporation.

ORDERED, AGREED, AND CONSENTED to by the parties.

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION, DIVISION OF SUPERFUND

6/21/96
Date

Clinton W. Willer
Clinton W. Willer, Director
Division of Superfund

THE STADIUM CORPORATION

6/19/96
Date

Richard Linio
Mr. Richard Linio
Executive Director

33-645

00070

File Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

4WD-RCRA

Reference No. 48
Southside Chattanooga Lead Site
EPA ID No.: TNN000410686

April 7, 1990

Mr. James Book, Environmental Engineer
U.S. Pipe & Foundry Company
P.O. Box 311
Chattanooga, Tennessee 37401

RE: RCRA Facility Assessment (RFA) Report
U.S. Pipe and Foundry Co., Chattanooga, Tennessee
Soil Pipe Division - EPA I.D. No. TND 074 893 777
Valve and Fitting Plant - EPA I.D. No. TND 980 316 301

Dear Mr. Book:

The Environmental Protection Agency (EPA) and the Tennessee Department of Health and Environment (TDHE) have completed their reviews of information collected during the RFA process for your facility. The purpose of an RFA is to identify all solid waste management units (SWMUs) at a given facility, assess each as to its potential for past or continuing releases of hazardous waste or hazardous constituents to any environmental media, and determine an appropriate course of action. Enclosed is a copy of the final RFA report and a summary of its findings.

Please notify Alicia B. Thomas of EPA at (404) 347-3433 and Ronnie Bowers of TDHE at (615) 741-3424, within the next forty-five (45) days, should you have any additional information which may affect the findings of the enclosed RFA report.

Sincerely yours,

James H Scarbrough

James H. Scarbrough, P.E.
Chief, RCRA Branch
Waste Management Division

Dale Ozier FOR

Tom Tiesler, Director
Division of Solid Waste Management
Tennessee Department of Health and Environment

Enclosures

cc: John Watson, U.S. Pipe & Foundry Co.,
Birmingham, Alabama (w/enclosures)

RCRA FACILITY ASSESSMENT REPORT

UNITED STATES PIPE AND FOUNDRY COMPANY

CHATTANOOGA, TENNESSEE

SOIL PIPE DIVISION

EPA I.D. NO. TND 074 893 777

VALVE AND FITTINGS PLANT

EPA I.D. NO. TND 980 361 301

Prepared for:

U.S. Environmental Protection Agency

Region IV

345 Courtland Street, N.E.

Atlanta, Georgia 30365

Prepared By:

A.T. Kearney, Inc.

225 Reinekers Lane

Alexandria, Virginia 22314

EPA Contract No. 68-01-7038

Work Assignment No. R04-05-36

March 1990

LIST OF FIGURES AND TABLES

TABLES (cont'd)

TABLE IV-4

SUGGESTED FURTHER ACTIONS FOR UNITS WITH LOW OR NO POTENTIAL FOR RELEASE

Due to factors discussed in Tables III-1, III-2, III-3 "SWMUs AND AOCs WITH LOW OR NO POTENTIAL FOR RELEASE" (pages III-6 thru III-8) the following areas require no further action at this time.

Fittings Plant

Unit Number	Unit Name
F-9	Coke Bottom Drop Pile
F-11	Green Sand and Core Butt Discharge
F-12	Shot-Blast Accumulation Area
F-19	Roll-off Boxes
F-20	Cupola Baghouse Silo
F-23	Former Scrubber
F-25	Number 9 Cyclone

Valve Plant

Unit Number	Unit Name
V-3	Lead Dross Drum Area
V-5	Transfer Dumpsters
V-6	Paint Booths

Soil Pipe Division

Unit Number	Unit Name
S-2	Soil Pipe Roll-off Box
S-3	Special Waste Truck
S-16	Coke Bottom Drop Pile
S-24	Cooling Tower

Summary of RFA Findings
U.S. Pipe and Foundry Company
Chattanooga, Tennessee
Soil Pipe Division - EPA I.D. No. TND 074 893 777
Valve & Fittings Plant - EPA I.D. No. TND 980 316 301

Soil Pipe Division

Unit No.	Unit Name	Recommendations
S-1	Scrap Metal Pile	Existing release potential - Preliminary RCRA Facility Investigation (RFI) required
S-2	Soil Pipe Roll-off Box	Low release potential - no further action required
S-3	Special Waste Truck	Low release potential - no further action required
S-4	Shop Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-5	Slag Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-6	Waste Oil Area	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-7	Large Diameter Pipe Drying Areas	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-8	Small Diameter Pipe Drying Areas	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-9	Paint Dip Traps	Continue compliance with air emissions permit. No RFI required
S-10	Naptha/Asphalt Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-11	Soil Pipe Cupola Baghouse	Continue compliance with air emissions permit. No RFI required.

Soil Pipe Division (cont'd)

Unit No.	Unit Name	Recommendations
S-12	DCE Vokes Baghouse	Continue compliance with air emissions permit. No RFI required
S-13	Griffin Baghouse	Continue compliance with air emissions permit. No RFI required
S-14	Sly 79 Baghouse	Continue compliance with air emissions permit. No RFI required
S-15	Zurn Baghouse	Continue compliance with air emissions permit. No RFI required
S-16	Coke Bottom Drop Pile	Low release potential - no further action required
S-17	Slag Accumulation Pile	Need for Preliminary RFI depends on presence of hazardous constituents in pile
S-18	Slag Pile	Need for Preliminary RFI depends on presence of hazardous constituents in pile
S-19	Staging Area Pile	Need for Preliminary RFI depends on presence of hazardous constituents in pile
S-20	Number 17 Pit	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-21	Wastewater Pipes	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-22	Clarifier	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-23	Sludge Drying Beds	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-24	Cooling Tower	Low release potential - no further action required

Soil Pipe Division (cont'd)

Unit No.	Unit Name	Recommendations
S-25	Cooling Tower Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-26	Sewer Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-27	Sanitary Sewer	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-28	Former Outfall	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-A	Underground Tank No. 5009	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-B	Underground Tank No. 5583	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-C	Underground Tank No. 3	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-D	Underground Tank No. 4	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-E	Underground Tank No. 5	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-F	Underground Tank No. 6	Existing release potential - Need for Preliminary RFI depends on unit integrity
S-G	Naptha/Asphalt Transfer System	Existing release potential - Need for Preliminary RFI depends on unit integrity

Valve Plant

Unit No.	Unit Name	Recommendations
V-1	Cabinet Cleaning Area Drain	Existing release potential - Need for Preliminary RFI depends on unit integrity
V-2	Hydrant Testing Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
V-3	Lead Dross Drum Area	Low release potential - no further action required
V-4	Lead Pot Melting Area	Continue compliance with air emissions permit. No RFI required
V-5	Transfer Dumpsters	Low release potential - no further action required
V-6	Paint Booths	Low release potential - no further action required
V-7	Brass Foundry Baghouse	Existing release potential - Need for Preliminary RFI depends on unit integrity
V-8	Brass Grinding Baghouse	Existing release potential - Need for Preliminary RFI depends on unit integrity
V-9	Brass Shot-Blast Baghouse	Existing release potential - Need for Preliminary RFI depends on unit integrity
V-10	Cabinet Cleaning Baghouse	Continue compliance with air emissions permit. No RFI required
V-11	Shell Mold Baghouse	Continue compliance with air emissions permit. No RFI required
V-A	Underground Tank No. 8	Existing release potential - Need for Preliminary RFI depends on unit integrity
V-B	Compressor Area	Existing release potential - Need for Preliminary RFI depends on unit integrity

Fittings Plant

Unit No.	Unit Name	Recommendations
F-1	Frag Pile	Need for Preliminary RFI depends on presence of hazardous constituents in pile
F-2	Non-Metallic Sump	Existing release potential - Preliminary RFI required
F-3	Slag Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-4	Vehicle Wash Area Sump	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-5	Oil/Water Separator	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-6	Solidification Discharge Area	Need for Preliminary RFI depends on presence of hazardous constituents in pile
F-7	Breaker Waste Pile	Need for Preliminary RFI depends on presence of hazardous constituents in pile
F-8	Cement Waste Pile	Need for Preliminary RFI depends on presence of hazardous constituents in pile
F-9	Coke Bottom Drop Pile	Low release potential - no further action required
F-10	Excess System Sand Pile	Need for Preliminary RFI depends on presence of hazardous constituents in the pile
F-11	Green Sand and Core Butt Discharge	Low release potential - no further action required
F-12	Shot-Blast Accumulation Area	Low release potential - no further action required

Fittings Plant

Unit No.	Unit Name	Recommendations
F-13	Slag Accumulation Area	Need for Preliminary RFI depends on presence of hazardous constituents in the pile
F-14	Staging Area	Need for Preliminary RFI depends on presence of hazardous constituents in pile
F-15	Empty Drum Storage Area	Existing release potential - Preliminary RFI required
F-16	Dip Tank Hoods	Continue compliance with air emissions permit. No RFI required.
F-17	Storm Sewer	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-18	Sanitary Sewer	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-19	Roll-off Boxes	Low release potential - no further action required
F-20	Cupola Baghouse Silo	Low release potential - no further action required
F-21	Cupola Baghouse	Continue compliance with air emissions permit. No RFI required.
F-22	Ductile Iron Baghouse	Continue compliance with air emissions permit. No RFI required.
F-23	Former Scrubber	Low release potential - no further action required
F-24	Griffin Baghouse	Continue compliance with air emissions permit. No RFI required.
F-25	Number 9 Cyclone	Low release potential - no further action required
F-26	Pangborn Baghouse	Continue compliance with air emissions permit. No RFI required.

Fittings Plant (cont'd)

Unit No.	Unit Name	Recommendations
F-27	Landfill	Continue groundwater monitoring program. No RFI required.
F-28	Runoff Pond	Existing release potential - Preliminary RFI required
F-29	Landfill Discharge Ditch/Pipe	Existing release potential - Preliminary RFI required
F-A	Hydraulic Oil Storage Area	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-B	Cupola Fuel Oil Underground Tank 1	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-C	Cupola Fuel Oil Underground Tank 2	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-D	Cupola Fuel Oil Underground Tank 3	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-E	Cupola Fuel Oil Underground Tank 4	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-F	Cupola Fuel Oil Underground Tank 5	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-G	Cupola Fuel Oil Underground Tank 6	Existing release potential - Need for Preliminary RFI depends on unit integrity
F-H	Coating Area	Existing release potential - Need for Preliminary RFI depends on unit integrity

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

1990 MAR 30 AM 11:19
TN. DEPT. HEALTH & ENV.
DIV. OF SOLID WASTE

ADB 3/30/90
LDO 3/30
RLB

MAR 27 1990

4WD-RCRA

Mr. Tom Tiesler, Director
Division of Solid Waste Management
Tennessee Department of Health and
Environment
701 Broadway
Customs House, 4th Floor
Nashville, Tennessee 37219-5403

RE: RCRA Facility Assessment Report (RFA) for
U.S. Pipe & Foundry, Chattanooga, Tennessee
Soil Pipe Division - EPA I.D. No. TND 074 893 777
Valve and Fittings Plant - EPA I.D. No. TND 980 316 301

Dear Mr. Tiesler:

This Agency has completed its review of the RFA report for U.S. Pipe and Foundry Company's Soil Pipe Division and Valve and Fittings Plant in Chattanooga, Tennessee. We have consulted with staff from your office and both our agencies concur with all recommendations presented in the interim RFA report. However, we have modified the text to clearly state that no further action is required for those units described as having "low or no potential for releases." We find the report, as modified, to be complete.

Enclosed is a joint letter, for your signature, to be sent to U.S. Pipe & Foundry regarding our Agencies' RFA findings. Please return a copy of the signed and date-stamped letter to this office. Enclosed also are a listing and two (2) copies of the revised RFA pages, one to be inserted in your copy of the RFA and the other for the RFA to be sent to the facility.

If you should have any questions regarding our decision, please contact Alicia B. Thomas at (404) 347-3433.

Sincerely yours,

James H. Scarbrough

James H. Scarbrough, P.E.
Chief, RCRA Branch
Waste Management Division

Enclosures

Listing of Revised RFA pages
U.S. Pipe and Foundry Company
Chattanooga, Tennessee

Soil Pipe Division
EPA I.D. No. TND 074 893 777

Valve and Fittings Plant
EPA I.D. No. TND 980 316 301

1. Title Page

2. Page iii - Continuation of the List of Figures and Tables

3. Page IV-17 - Table IV-4, Suggested Further Actions for Units with Low or No Potential for Releases

NOTE: Table IV-4 was added to the RFA report by EPA (i.e., it was not in the original contractor-prepared report)

RCRA FACILITY ASSESSMENT REPORT

UNITED STATES PIPE AND FOUNDRY COMPANY

CHATTANOOGA, TENNESSEE

SOIL PIPE DIVISION

EPA I.D. NO. TND 074 893 777

VALVE AND FITTINGS PLANT

EPA I.D. NO. TND 980 361 301

Prepared for:

U.S. Environmental Protection Agency

Region IV

345 Courtland Street, N.E.

Atlanta, Georgia 30365

Prepared By:

A.T. Kearney, Inc.

225 Reinekers Lane

Alexandria, Virginia 22314

EPA Contract No. 68-01-7038

Work Assignment No. R04-05-36

March 1990

LIST OF FIGURES AND TABLES

TABLES (cont'd)

TABLE IV-4

SUGGESTED FURTHER ACTIONS
FOR UNITS WITH LOW OR
NO POTENTIAL FOR RELEASE

Due to factors discussed in Tables III-1, III-2, III-3 "SWMUs AND AOCs WITH LOW OR NO POTENTIAL FOR RELEASE" (pages III-6 thru III-8) the following areas require no further action at this time.

Fittings Plant

Unit Number	Unit Name
F-9	Coke Bottom Drop Pile
F-11	Green Sand and Core Butt Discharge
F-12	Shot-Blast Accumulation Area
F-19	Roll-off Boxes
F-20	Cupola Baghouse Silo
F-23	Former Scrubber
F-25	Number 9 Cyclone

Valve Plant

Unit Number	Unit Name
V-3	Lead Dross Drum Area
V-5	Transfer Dumpsters
V-6	Paint Booths

Soil Pipe Division

Unit Number	Unit Name
S-2	Soil Pipe Roll-off Box
S-3	Special Waste Truck
S-16	Coke Bottom Drop Pile
S-24	Cooling Tower

3-27-89 [illegible]

200

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

1989 MAR 27 PM 3:05

TN. DEPT. HEALTH & ENV.
DIV. OF SOLID WASTE

4WD-RCRA

MAR 17 1989

Mr. Tom Tiesler, Director
Division of Solid Waste Management
Tennessee Department of Health and
Environment
701 Broadway
Customs House, 4th Floor
Nashville, Tennessee 37219-5403

RE: Draft RCRA Facility Assessment (RFA) Report for
U.S. Pipe and Foundry, Chattanooga, Tennessee
Soil Pipe Division - EPA I.D. No. TND 074 893 777
Valve and Fitting Plant - EPA I.D. No. TND 980 316 301

Dear Mr. Tiesler:

Enclosed, for your review and comments, is a copy of the Draft RCRA Facility Assessment (RFA) Report for U.S. Pipe and Foundry's Soil Pipe Division and Valve and Fittings Plant in Chattanooga, Tennessee. Please submit comments on the Draft RFA Report to our office within thirty (30) days of receipt of this letter.

If you should have any questions, please contact Alicia B. Thomas at (404) 347-3433.

Sincerely yours,

John E Dickinson (for)

James H. Scarbrough, P.E.
Chief, RCRA Branch
Waste Management Division

Enclosure

cc: Dale Ozier, TDHE

INTERIM RCRA FACILITY ASSESSMENT REPORT

UNITED STATES PIPE AND FOUNDRY COMPANY

SOIL PIPE DIVISION

EPA ID No. TND074893777

VALVE AND FITTINGS PLANT

EPA ID NO. TND980316301

Prepared for:

U.S. Environmental Protection Agency

Region IV

345 Courtland Street, N.E.

Atlanta, Georgia 30365

Prepared by:

A.T. Kearney, Inc.

225 Reinekers Lane

Alexandria, Virginia 22314

EPA Contract No. 68-01-7038

Work Assignment No. R04-05-36

March 1989

INTERIM RCRA FACILITY ASSESSMENT REPORT
UNITED STATES PIPE AND FOUNDRY COMPANY

SOIL PIPE DIVISION
EPA ID No. TND074893777

VALVE AND FITTINGS PLANT
EPA ID NO. TND980316301

TABLE OF CONTENTS

ATTACHMENTS

LIST OF FIGURES AND TABLES

FIGURES

TABLES

LIST OF FIGURES AND TABLES

TABLES (cont'd)

LIST OF FIGURES AND TABLES

TABLES (cont'd)

I. INTRODUCTION

The Resource Conservation and Recovery Act (RCRA) Section 3007(a) provides EPA the authority to access and inspect a facility for the purposes of determining whether it is managing hazardous or solid wastes. The intent of this authority is to address potential releases to air, surface water, soil and ground water, and from the generation of subsurface gas. In order to accomplish this objective, a RCRA Facility Assessment (RFA) is undertaken, consisting of a review of file material, a Visual Site Inspection (VSI), and, if appropriate, a Sampling Visit (SV).

The objectives of this RCRA Facility Assessment (RFA) are to:

1. Identify all Solid Waste Management Units (SWMUs) and other Areas of Concern (AOCs) located at the U.S. Pipe and Foundry site;

2. Use related information obtained from the file review and Visual Site Inspection (VSI) to assess the potential for release of hazardous wastes or constituents from each SWMU and AOC; and

3. For each SWMU and AOC, determine what course of action, if any, should be followed to safeguard human health and the environment from a release. When further remedial investigation or corrective action not already underway is deemed appropriate, suggest site-specific further actions that may be used to initiate necessary cleanup and/or restoration.

U.S. Pipe and Foundry maintains two foundries in Chattanooga, Tennessee, the Valve and Fittings Plant (TND 9800316301) and the Soil Pipe Division (TND 074893777). These two foundries comprise three plants. Although the foundries are managed separately by U.S. Pipe and Foundry, both dispose of foundry wastes at a common on-site landfill and are situated on contiguous property. The Soil Pipe Division is a gray foundry (cast iron) maintaining two cupola (dome shaped) coke-fired furnaces and produces cast iron pipes. The Valve and Fittings Plant is two separate plants. The Valve Plant consists of a brass foundry and fire hydrant assembly plant and the Fittings Plant is a gray foundry producing ductile iron pipe fittings by adding a magnesium alloy to molten iron. The Fittings Plant maintains one cupola furnace.

This report summarizes file information maintained at EPA Region IV, the Southeast Regional Office of the Tennessee Department of Health and Environment (TDHE) and the Chattanooga-Hamilton County Air Pollution Control Bureau (CHCAPCB). Chapter II discusses the facility's location, history, process description, waste management, and history of releases. A listing and maps of SWMUs and other AOCs identified by this study are presented in Chapter III. Conclusions pertaining to release potential and suggested further actions for each SWMU and AOC are discussed in Chapter IV. The suggested approaches for sampling and analysis, if appropriate, are presented in Chapter V. All references used in this report are in Chapter VI. Included in Attachment A are documented observations made during the VSI and a Photograph Log. A summary of information developed for each SWMU and AOC identified during the file review and VSI is presented in Attachment B. Analytical data pertaining to the ongoing ground-water monitoring activities is included in Attachment C.

Solid Waste Management Units and Areas of Concern presented in this report are designated with letters followed by numbers. The letters represent the appropriate plants in which the units are located such as F, V and S Fittings Plant (F), Valve Plant (V) and the Soil Pipe Division (S), respectively.

TABLE I-1

SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN
UNITED STATES PIPE AND FOUNDRY
SOIL PIPE DIVISION
AND
VALVE AND FITTINGS PLANT
CHATTANOOGA, TENNESSEE

SWMU Number	Name	Operational Status	Potential for Release
Fittings Plant			
F-1	Frag Pile	Active	High
F-2	Non-Metallics Sump	Active	High
F-3	Slag Sump	Active	Dependent on integrity
F-4	Vehicle Wash Area Sump	Active	Dependent on integrity
F-5	Oil/Water Separator	Active	Dependent on integrity
F-6	Solidification Discharge Area	Active	High
F-7	Breaker Waste Pile	Active	High
F-8	Cement Waste Pile	Active	High
F-9	Coke Bottom Drop Pile	Active	Low
F-10	Excess System Sand Pile	Active	High
F-11	Green Sand and Core Butt Discharge	Active	Low
F-12	Shot-Blast Accumulation Area	Active	Low
F-13	Slag Accumulation Area	Active	High
F-14	Staging Area	Active	High
F-15	Empty Drum Storage Area	Active	High
F-16	Dip Tank Hoods	Active	High
F-17	Storm Sewer	Active	High
F-18	Sanitary Sewer	Active	Dependent on integrity
F-19	Roll-off Boxes	Active	Low
F-20	Cupola Baghouse Silo	Active	Low
F-21	Cupola Baghouse	Active	High
F-22	Ductile Iron Baghouse	Active	High
F-23	Former Scrubber	Inactive	None
F-24	Griffin Baghouse	Active	High
F-25	Number 9 Cyclone	Inactive	Low
F-26	Pangborn Baghouse	Active	High
F-27	Landfill	Active	High
F-28	Runoff Pond	Active	High
F-29	Landfill Discharge Ditch/Pipe	Active	High
F-A	Hydraulic Oil Storage Area	Active	High
F-B	Cupola Fuel Oil Underground Tank No. 1	Active	Dependent on integrity
F-C	Cupola Fuel Oil Underground Tank No. 2	Active	Dependent on integrity
F-D	Underground Tank No. 3	Inactive	Dependent on integrity
F-E	Underground Tank No. 4	Active	Dependent on integrity
F-F	Underground Tank No. 5	Active	Dependent on integrity
F-G	Underground Tank No. 6	Active	Dependent on integrity
F-H	Coating Area	Active	High

TABLE I-1 (continued)

SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN
UNITED STATES PIPE AND FOUNDRY
SOIL PIPE DIVISION
AND
VALVE AND FITTINGS PLANT
CHATTANOOGA, TENNESSEE

SWMU Number	Name	Operational Status	Potential for Release
Valve Plant			
V-1	Cabinet Cleaning Area Drain	Active	Dependent on integrity
V-2	Hydrant Testing Sump	Active	Dependent on integrity
V-3	Lead Dross Drum Area	Active	Low
V-4	Lead Melting Pot Area	Active	High
V-5	Transfer Dumpsters	Active	Low
V-6	Paint Booths	Active	Low
V-7	Brass Foundry Baghouse	Active	High
V-8	Brass Grinding Baghouse	Active	High
V-9	Brass Shot-Blast Baghouse	Active	High
V-10	Cabinet Cleaning Baghouse	Active	High
V-11	Shell Mold Baghouse	Active	High
V-A	Underground Tank No. 8	Active	Dependent on integrity
V-B	Compressor Area	Active	Dependent on integrity
Soil Pipe Division			
S-1	Scrap Metal Pile	Active	High
S-2	Soil Pipe Roll-off Box	Active	Low
S-3	Special Waste Truck	Active	Low
S-4	Shop Sump	Active	Dependent on integrity
S-5	Slag Sump	Active	Dependent on integrity
S-6	Waste Oil Area	Active	Dependent on integrity
S-7	Large-Diameter Pipe Drying Areas	Active	High
S-8	Small-Diameter Pipe Drying Areas	Active	High
S-9	Paint Dip Traps	Active	High
S-10	Naphtha/Asphalt Sump	Active	High
S-11	Soil Pipe Cupola Baghouse	Active	High
S-12	DCE Vokes Baghouse	Active	High
S-13	Soil Pipe Griffin Baghouse	Active	High
S-14	Sly 79 Baghouse	Active	High
S-15	Zurn Baghouse	Active	High
S-16	Coke Bottom Drop Pile	Active	Low
S-17	Slag Accumulation Area	Active	High
S-18	Slag Pile	Active	High
S-19	Soil Pipe Staging Area	Active	High
S-20	Number 17 Pit	Active	Dependent on integrity
S-21	Wastewater Pipes	Active	Dependent on integrity
S-22	Clarifier	Active	Dependent on integrity

TABLE I-1 (continued)

SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN
UNITED STATES PIPE AND FOUNDRY
SOIL PIPE DIVISION
AND
VALVE AND FITTINGS PLANT
CHATTANOOGA, TENNESSEE

SWMU Number	Name	Operational Status	Potential for Release
Soil Pipe Division (continued)			
S-23	Sludge Drying Beds	Active	Moderate
S-24	Cooling Tower	Active	Low
S-25	Cooling Tower Sump	Active	Dependent on integrity
S-26	Sewer Sump	Active	Dependent on integrity
S-27	Sanitary Sewer	Active	Dependent on integrity
S-28	Former Outfall	Inactive	Dependent on integrity
S-A	Underground Tank No. 5009	Inactive	Dependent on integrity
S-B	Underground Tank No. 5583	Active	Dependent on integrity
S-C	Underground Tank No. 3	Active	Dependent on integrity
S-D	Underground Tank No. 4	Active	Dependent on integrity
S-E	Underground Tank No. 5	Active	Dependent on integrity
S-F	Underground Tank No. 6	Active	Dependent on integrity
S-G	Naphtha/Asphalt Transfer System	Active	High

II. FACILITY DESCRIPTION

INTRODUCTION

The United States Pipe and Foundry operates two facilities in Chattanooga, Tennessee: the Soil Pipe Division (TND 074 893 777) and the Valve and Fittings Plant (TND 980 316 301). The Soil Pipe Division maintains two cupola furnaces and manufactures underground soil pipes. The Valve and Fittings facility comprises two plants. The Fittings Plant maintains a cupola furnace and produces ductile iron fittings. The Valve Plant maintains a brass foundry and a small lead kettle and manufactures brass and bronze valves and assembles fire hydrants. The Solid Waste Management Units, AOCs, and other relevant data are presented for each of the three plants: the Fittings Plant, the Valve Plant and the Soil Pipe Division. All three plants are situated on contiguous property in an industrial park located on the east bank of the Tennessee River. Most of the neighboring facilities are foundries that were constructed at the site of previous foundries or on top of waste foundry sand. Excess foundry sand covers many of the asphalt, concrete and gravel surfaces at the U.S. Pipe facilities. The U.S. Pipe facilities share a common Landfill (SWMU F-27) that is bordered on the north by the Soil Pipe Division, on the east by the Valve Plant and on the south by the Fittings Plant. The Tennessee River is the western border of the Landfill (References 13 and 70).

The facilities utilize three cupola coke-fired furnaces to melt scrap iron into molten metal. Particles retained by air pollution devices controlling emissions from the cupola furnaces exhibit characteristics of EP toxicity for lead and cadmium. Conflicting interpretation of the regulations regarding classification and disposition of these particles (baghouse dust) has generated disagreement between U.S. Pipe, EPA Region IV, and the Tennessee Department of Health and Environment (TDHE). U.S. Pipe claims exclusion because the baghouse dust is generated by burning fossil fuel and is subject

TABLE IV-3

ASSESSMENT OF POTENTIAL FOR RELEASE AND SUGGESTED FURTHER ACTIONS

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
S-8	Small-Diameter Pipe Drying Areas	Releases to the air by these units are permitted by C-HCAPCB. The potential for subsurface gas generation and for release to soil and ground water is dependent on the integrity of the asphalt beneath the units. The potential for release to surface water is low since all surface water discharges to the Sanitary Sewer (SWMU S-27).	Continue compliance with C-HCAPCB permits. Determine the integrity of the asphalt. If the integrity is impaired, conduct sampling to determine if hazardous constituents have been released.
S-9	Paint Dip Traps	Releases to the air by these units are permitted by C-HCAPCB. The potential for subsurface gas generation and for releases to soil and groundwater is low since the integrity of these units appeared adequate and the units are underlain by concrete. The potential for release to surface water is low since the unit is covered by an overhang. All runoff at the facility is discharged to the Sanitary Sewer (SWMU S-27).	Continue compliance with C-HCAPCB permits.
S-10	Naphtha/Asphalt Sump	Releases to the air by this unit are permitted by C-HCAPCB. The potential for subsurface gas generation and releases to soil and ground water is high based on the observed staining around the perimeter of the concrete. The release potential for surface water is low due to the below-ground location of the unit.	Continue compliance with C-HCAPCB permits. Determine the integrity of the unit. In addition, conduct soil sampling around the perimeter of the concrete to determine if hazardous constituents have been released.

TABLE IV-3

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
S-11 S-12 S-13 S-14	Soil Pipe Cupola Baghouse DCE Vokes Baghouse Soil Pipe Griffin Baghouse Sly 79 Baghouse	Releases to the air by these units are permitted by C-HCAPCB. The potential for subsurface gas generation and release to other media is low due to the above-ground location of the units. These units are self-contained and integrity appeared adequate. The units are underlain by concrete or asphalt.	Continue compliance with C-HCAPCB permits.
S-15	Zurn Baghouse	Release to the air by this unit is permitted by C-HCAPCB. The potential for subsurface gas generation is low due to the nature of the waste. The potential for release to soil and ground water is low due to the nonhazardous nature of the waste. The potential for release to surface water is low since runoff is discharged to the Sanitary Sewer (SWMU S-27).	Continue compliance with C-HCAPCB permits. Consider design changes in the hopper/screw conveyor discharge system to prevent spillage.
S-17 S-18 S-19	Slag Accumulation Pile Slag Pile Staging Area	The potential for release to air and from subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil, ground water, and surface water is high due to the location outdoors and lack of secondary containment.	Provide documentation or conduct sampling of the wastes in these waste piles to determine if hazardous constituents are present. If so, conduct soil sampling in the areas of runoff drainage pathways to determine if hazardous constituents have been released.

TABLE IV-3

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
S-20 S-21 S-25 S-26	Number 17 Pit Wastewater Pipes Cooling Tower Sump Sewer Sump	The potential for release to air and the for subsurface gas generation is low due to the nature of the waste. The potential for release to soil and ground water is dependent on the integrity of the unit. The potential for release to surface water is low due to the below-ground location of the units.	Determine the integrity of the units. If the integrity is impaired, conduct soil sampling to determine if hazardous constituents have been released.
S-22 S-23	Clarifier Sludge Drying Beds	The potential for release to air and for subsurface gas generation is low due to the nature of the waste. The potential for release to soil and ground water is dependent on the integrity of the units. The potential for release to surface water is moderate due to the proximity of surface water.	Determine the integrity of the units. If the integrity is impaired, conduct soil sampling to determine if hazardous constituents have been released. Consider design changes to control surface water runoff.
S-27	Sanitary Sewer	The potential for release to air is low due to the below-ground location of the unit. The potential for release to all other media is dependent on the integrity of the unit.	Determine the integrity of the unit. If the integrity is impaired, conduct soil sampling to determine if hazardous constituents have been released.

TABLE IV-3

ASSESSMENT OF POTENTIAL FOR RELEASE AND SUGGESTED FURTHER ACTIONS

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Potential for for Release	Suggested Further Actions
S-28	Former Outfall	The potential for release to air and for subsurface gas generation is low due to the nature of the waste. The potential for release to soil and ground water is dependent on the integrity of the unit. The potential for release to surface water is high since this unit has a history of releases.	Determine the integrity of the unit and the effectiveness of repairs made to remove the unit from service. If the integrity is impaired, conduct sampling to determine the extent and nature of contamination.
S-A S-B S-C S-D S-E S-F	Underground Tank No. 5009 Underground Tank No. 5583 Underground Tank No. 3 Underground Tank No. 4 Tank No. 5 Tank No. 6	The potential for release to air is low due to the below-ground location of the units. The potential for subsurface gas generation and for release to soil and ground water is dependent on the integrity of the units. The potential for release to surface water is low due to the below-ground location of the units.	Determine the integrity of the units. If the integrity is impaired, conduct sampling to determine if hazardous constituents have been released.
S-G	Naphtha/Asphalt Transfer System	Releases to the air by this unit are permitted by C-HCAPCB. The potential for subsurface gas generation and releases to soil and ground water is high based on the observed staining around the perimeter of the concrete. The release potential for surface water is low due to the below-ground location of the unit.	Continue compliance with C-HCAPCB permits. Determine the integrity of the unit. In addition, conduct soil sampling around the perimeter of the concrete to determine if hazardous constituents have been released.

V. SUGGESTED PLAN FOR SAMPLING APPROACH

This section summarizes the suggested plan for sampling environmental media at SWMUs and AOCs where past or continuing potential for release exists. This information is summarized and presented in Tables V-1 through V-5. Implementation of any suggested plan for sampling and analysis should be closely coordinated with TDHE.

TABLE V-1

SAMPLING APPROACHES FOR SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Suggested Sampling Approach
F-1 F-6 F-7 F-8 F-10 F-13	Frag Pile Solidification Discharge Area Breaker Waste Pile Cement Waste Pile Excess System Sand Pile Slag Accumulation Area	Analyze representative sample of wastes for presence of Appendix IX semi-volatiles and metals. If found, then sample the soil (in sufficient numbers and depths) in the drainage pathways. Analyze the samples for Appendix IX semi-volatiles and metals.
F-2	Non-Metallics Sump	Sample the soil (in sufficient numbers and depths) in the discharge area. If the integrity of the unit is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze all samples for Appendix IX volatiles, semi-volatiles and metals.
F-3	Slag Sump	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX metals.
F-4 F-5 F-A	Vehicle Wash Area Sump Oil/Water Separator Hydraulic Oil Storage Area	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath and around the unit. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
F-15	Empty Drum Storage Area	Sample the soil (in sufficient numbers and depths) in the stained areas. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
F-17 F-18	Storm Sewer Sanitary Sewer	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.

TABLE V-1

SAMPLING APPROACHES FOR SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Suggested Sampling Approach
F-28	Runoff Pond	Sample the sediment and water (in sufficient numbers and depths). Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
F-29	Landfill Discharge Ditch/Pipe	Sample the water (in sufficient numbers and frequencies). If constituents are being released, sample the sediment (in sufficient numbers) in the vicinity of the discharge. If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
F-B	Cupola Fuel Oil Underground Tank 1	
F-C	Cupola Fuel Oil Underground Tank 2	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the units. Analyze the samples for Appendix IX volatiles and semi-volatiles and metals.
F-D	Underground Tank 3	
F-E	Underground Tank 4	
F-F	Underground Tank 5	
F-G	Underground Tank 6	
F-H	Coating Area	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the asphalt. Analyze the samples for Appendix IX volatiles and semi-volatiles and metals.

TABLE V-2

SAMPLING APPROACHES FOR SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN

VALVE PLANT

Unit Number	SWMU or Other Area of Concern	Suggested Sampling Approach
V-1	Cabinet Cleaning Area Drain	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
V-2	Hydrant Testing Sump	
V-7	Brass Foundry Baghouse	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the asphalt. Analyze the samples for Appendix IX metals.
V-8	Brass Grinding Baghouse	
V-9	Brass Shot Blast Baghouse	
V-A	Underground Tank No. 8	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
V-B	Compressor Area	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the asphalt. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals constituents.

TABLE V-3

SAMPLING APPROACHES FOR SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Suggested Sampling Approach
S-1	Scrap Metal Pile	Sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
S-4	Shop Sump	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
S-5	Slag Sump	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX metals.
S-6	Waste Oil Area	If the integrity of the asphalt is impaired, sample the soil (in sufficient numbers and depths) beneath the asphalt. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
S-7 S-8	Large-Diameter Pipe Drying Areas Small-Diameter Pipe Drying Areas	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the asphalt. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
S-10	Naphtha/Asphalt Sump	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. In addition, sample the soil around the perimeter of the concrete. Analyze the samples for Appendix IX volatiles and semi-volatiles.
S-17 S-18 S-19	Slag Accumulation Pile Slag Pile Staging Area	Sample the soil (in sufficient numbers and depths) in the drainage areas. Analyze the samples for Appendix IX semi-volatiles and metals.

TABLE V-3

SAMPLING APPROACHES FOR SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN (continued)

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Suggested Sampling Approach
S-20 S-21 S-22 S-23 S-25 S-26 S-27 S-28	Number 17 Pit Wastewater Pipes Clarifier Sludge Drying Beds Cooling Tower Sump Sewer Sump Sanitary Sewer Former Outfall	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the units. Analyze the samples for Appendix IX volatiles, semi-volatiles and metals.
S-A S-B S-C S-D S-E S-F	Underground Tank No. 5009 Underground Tank No. 5583 Underground Tank No. 3 Underground Tank No. 4 Underground Tank No. 5 Underground Tank No. 6	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. Analyze the samples for Appendix IX volatiles and semi-volatiles and metals.
S-G	Naphtha/Asphalt Transfer System	If the integrity is impaired, sample the soil (in sufficient numbers and depths) beneath the unit. In addition, sample the soil around the perimeter of the concrete. Analyze the samples for Appendix IX volatiles and semi-volatiles.

VI. REFERENCES

SOIL PIPE DIVISION

1. Inspection Report for U.S. Pipe and Foundry Company Soil Pipe Plant, Chattanooga, Tennessee (TND073893777), June 29, 1988.

2. Final Report Determination of Regulatory Status of Iron Foundries, U.S. Pipe and Valve Company, prepared for EPA Office of Waste Programs Enforcement by Lee Wan and Associates, Inc., October 19, 1987.

3. Landfill Inspection Form for U.S. Pipe and Foundry Company (TND07893777), March 31, 1988.

4. Letter from Tom Tiesler (TDHE) to John H. Watson (U.S. Pipe and Foundry Company), Re: Request Attendance and Show Cause Pertaining to Baghouse Dust Enforcement Action, June 17, 1987.

5. Waste Sampling Investigation U.S. Pipe - Soil Pipe Plant, Chattanooga, Tennessee, for EPA Environmental Services Division by Bruce Ferguson, April 1986.

6. Physical/Chemical Characterization of Foundry Solid Wastes, U.S. Pipe and Foundry Company - Chattanooga Plants, prepared by U.S. Pipe and Foundry, December 3, 1985.

7. Memorandum from Woodson Smith (TDHE) to Burl Maupin (TDHE), Re: U.S. Pipe and Foundry Company Identification of Unknown Discharge, and Review of Plans for Landfill, November 21, 1984.

8. Response to Petition filed on behalf of U.S. Pipe and Foundry Company by Attorney William D. Vines, III, August 24, 1988.

9. Letter from Tom Tiesler (TDHE) to Mr. J.B. Dockery (U.S. Pipe and Foundry - Soil Pipe Plant), Re: Continuance of Enforcement in the matter of Begin Proper Management of the Cupola Baghouse Dust, July 25, 1984.

10. Sources and Types of Wastes for Disposal in Permitted Landfill Chattanooga Soil Pipe.

11. Memorandum from Steve Baxter (TDHE) to Frank Victory (TDHE), Re: Case History of Cupola Baghouse Dust, U.S. Pipe and Foundry Company, October 17, 1983.

12. Hazardous Waste Management Form prepared by U.S. Pipe and Foundry Company, October 3, 1983.

SOIL PIPE DIVISION (cont'd)

13. Geologic Evaluation of a Foundry Sand Disposal Site for U.S. Pipe and Foundry in Hamilton County, June 8, 1983.

14. Open Dump Inventory Update provided by Rebecca F. Harris (TDHE) for U.S. Department of Commerce, Bureau of Census, January 6, 1983.

15. Memorandum from Woodson Smith (TDHE) to Burl Maupin (TDHE), Re: Identification of Unknown Discharge and Review of Plans for Landfill, November 21, 1984.

16. Memorandum to File from Woodson Smith, Re: U.S. Pipe and Foundry Landfill, November 8, 1984.

17. Memorandum to TDHE Water Management Staff from Enforcement Section, Re: Agreed Order Requiring U.S. Pipe to Pay Civil Penalty, February 24, 1983.

18. Agreed Order, U.S. Pipe and Foundry before the Tennessee Water Quality Control Board, February 18, 1983.

19. Public Notice, Re: Termination of Certain NPDES Permits including U.S. Pipe and Foundry Soil Division, December 11, 1981.

20. Compliance Inspection Report for U.S. Pipe and Foundry, Soil Pipe Division, Chattanooga, Tennessee (TND07893777), August 7, 1981.

21. Letter from Philip L. Stewart (TDHE) to John H. Watson (U.S. Pipe), Re: Approval for Construction of Proposed Sump and Pumping System, July 8, 1981.

22. Complaint and Order 81-006 -- U.S. Pipe and Foundry Company, Soil Pipe Division, April 21, 1981.

23. Memorandum from Jack McCormick (Tennessee Department of Public Health) to Terry Cuthron [Enforcement], Re: Review of Chattanooga Basin Office's Request for Enforcement Action Against U.S. Pipe and Foundry Company's Soil Pipe Plant.

24. Request for Enforcement Action: Civil Penalty Against U.S. Pipe Foundry, Soil Pipe Division Violation of NPDES Permit.

25. NPDES Permit TN0003808 for U.S. Pipe and Foundry Effective April 6, 1979.

26. City of Chattanooga Department of Public Works Interceptor Sewer System Water Discharge Permit, Effective February 1, 1979.

27. Water Flow Rates and Diagram for U.S. Pipe and Foundry, December 22, 1977.

SOIL PIPE DIVISION (cont'd)

28. Industrial Wastewater Discharge Information, U.S. Pipe and Foundry - Soil Pipe Plant, July 8, 1977.

29. Tennessee Water Quality Control Board Permit for U.S. Pipe and Foundry Company Soil Pipe Plant issued August 19, 1977.

30. Memorandum to File from Jack McCormick (Tennessee Department of Public Health), Re: Conversation with John Watson (U.S. Pipe), June 16, 1977.

31. Compliance Monitoring Reports for U.S. Pipe and Foundry, June 1, 1977.

32. Letter from Jack McCormick (Tennessee Department of Public Health) to John Watson (U.S. Pipe), Re: Inspection of New Wastewater Pretreatment Facility, August 16, 1976.

33. Letter from Jimmy G. Mantooth (Tennessee Department of Public Health) to Z. L. Taylor (Harmon Engineering), Re: Preliminary Engineering Reports for Sludge Beds, July 21, 1975.

34. Compliance Monitoring Report for U.S. Pipe and Foundry Soil Pipe Division, February 6, 1975.

35. Temporary Permit 75-14 for the Discharge of Industrial Wastewater into the Nickajack Reservoir at Tennessee River Mile 462.4 Issued November 4, 1974.

36. Letter from Robert A. Hunt (Hamilton County Health Department) to Mr. J.R. Nelson (Combustion Engineering Company, Inc.), Re: Sale of Foundry Section of Combustion Engineering Company to U.S. Pipe Company.

37. Directors' Conference between Chattanooga-Hamilton County Air Pollution Control Bureau and U.S. Pipe - Pipe Soil Division, May 19, 1988.

38. Agreed Order Docket 527: U.S. Pipe and Foundry.

39. Inspection Report for U.S. Pipe and Foundry Company - Soil Pipe Division, Chattanooga, Tennessee, January 7, 1987.

40. Letter from Don W. Montgomery (U.S. Pipe) to Robert H. Colby (Chattanooga-Hamilton County Air Pollution Control Bureau), Re: Response to NOV#04449, January 14, 1986.

41. Letter from W. Harvey Rice (Chattanooga-Hamilton County Air Pollution Control Bureau) to Don Montgomery (U.S. Pipe), Re: Installation Permit 0029-304003991-06I Shell Core Sand System, March 4, 1985.

SOIL PIPE DIVISION (cont'd)

42. Letter from J.F. Pleasant (U.S. Pipe) to Wayne Corp. (Chattanooga-Hamilton County Air Pollution Control Bureau), Re: Recertification of 108" Diameter Cupola Series by Baghouse; Permit #0029-30400301-05, February 15, 1983.

43. Letter from J. Wayne Cropp (Chattanooga-Hamilton County Air Pollution Control Bureau) to James B. Dockery (U.S. Pipe), Re: Notice of Violation Nos.3749, 4014, 4015, February 4, 1983.

44. Summary of Malfunctions at the Cupola Baghouse for the year 1982.

VALVE AND FITTINGS PLANT

45. Letter to Tom Tiesler, Tennessee Department of Health and Environment, from John Watson, U.S. Pipe and Foundry Company, re: Landfill at Chattanooga Plants, dated October 28, 1987.

46. Letter to John Watson, U.S. Pipe and Foundry Company, from Rebecca Harris, Division of Solid Waste Management, re: Open Dump Inventory, Chattanooga, dated September 29, 1981.

47. Letter to Commissioner, Tennessee Department of Public Health, from John Watson, U.S. Pipe and Foundry Company, re: Resource Recovery Exclusion Petition for Chattanooga Valve and Fittings Plant, dated May 23, 1985.

48. Letter to Philip Stewart, Chattanooga Basin Office of Division of Water Management, from Wayne Berry, U.S. Pipe and Foundry Company, re: Performance Audit Inspection, dated December 13, 1984.

49. Letter to Wayne Berry, U.S. Pipe and Foundry Company, from Philip Stewart, Division of Water Management, re: Performance Audit Inspection, dated November 1, 1984.

50. Public Notice of State of Tennessee Department of Health and Environment, proposing to issue, modify or terminate NPDES permits and State Water Quality permits, dated August 24, 1984.

51. Letter to W. Fleck, U.S. Pipe and Foundry, from Paul Davis, Division of Water Management, re: Draft NPDES Permit, dated August 17, 1984.

52. Letter to Wayne Berry, U.S. Pipe and Foundry Company, from Jack McCormick, Department of Public Health, re: Performance Audit Inspection, dated May 9, 1983.

53. Memorandum to Files and Jack McCormick from J. Michael Cox, Tennessee Department of Public Health, re: U.S. Pipe and Foundry, Valve and Fittings Plant Flow Measuring Device, dated June 22, 1981.

VALVE AND FITTINGS PLANT (cont'd)

54. Water Flow Chart for U.S. Pipe and Foundry, dated 1980.

55. Letter to Chattanooga Hamilton County, from James Smallwood, U.S. Pipe and Foundry, re: Solidification Processes, dated December 7, 1988.

56. Findings from the Chattanooga-Hamilton County Air Pollution Control Bureau, dated September 14, 1988.

57. Memorandum to Pat Patrick from Ann Keith, re: U.S. Pipe and Foundry, Valve Installation Permit, dated May 9, 1988.

58. Agreed Order from the Chattanooga-Hamilton County Air Pollution Control Board, dated June 6, 1988.

59. Findings from the Chattanooga-Hamilton County Air Pollution Control Board, dated March 8, 1988.

60. Memorandum to Pat Patrick from Ann Keith, re: U.S. Pipe Valve Installation Permit, dated May 5, 1988.

61. Memorandum to Pat Patrick from Ann Keith, re: U.S. Pipe Installation Permit, dated February 5, 1988.

62. Letter to John Pleasant, U.S. Pipe, from Robert Colby, Air Pollution Control Bureau, re: Order, dated December 2, 1986.

63. Letter to Wayne Cropp, Chattanooga-Hamilton County Air Pollution Control Bureau, from John Pleasant, U.S. Pipe, re: Consent Order and Agreement, dated September 11, 1986.

64. Consent Order and Agreement from Chattanooga-Hamilton County Air Pollution Control Bureau, dated September 3, 1985.

65. Source Compliance Activity Report, dated 1985.

66. U.S.G.S. Topographic Map, Chattanooga, Tennessee, Quadrangle photo, revised 1976.

67. Hamilton County Soil Survey, USDA Soil Conservation Service, 1982.

68. Flood Insurance Rate Map (FIRM), City of Chattanooga, Tennessee, Panel 20 of 30, National Flood Insurance Program, September 3, 1980.

69. Field Inspection Report, U.S. Pipe and Foundry - Valve Division, conducted July 22, 1982.

70. Logs for Visual Site Inspection Conducted January 23 and 24, 1989.

VALVE AND FITTINGS PLANT (cont'd)

71. U.S. Pipe and Foundry Company Foundry Landfill Operations Manual Chattanooga, Tennessee, Prepared by MCI EDGE Groupe, Incorporated, January 15, 1988.

72. Ground Water Resources of East Tennessee Bulletin 58, 1956, G.D. DeBuchananne and R.M. Richardson.

73. Letter to W.J. Michael Cody, Attorney General, from James E. Word, TDHE, Re: Legal opinion regarding baghouse dust, March 16, 1988.

74. Letter to John Watson (U.S. Pipe) from Tom Tiesler (TDHE), Re: Cupola baghouse dust, July 19, 1985.

75. Letter to Tom Tiesler (TDHE) from William D. Vines III (Butler, Vines, Babb and Treadgill), Re: response to NOV, January 11, 1985.

ATTACHMENT A

VISUAL SITE INSPECTION SUMMARY
AND PHOTOGRAPH LOG

INTRODUCTION

The Visual Site Inspection (VSI) summary discusses the activities of representatives of A.T. Kearney, Inc., and U.S. EPA Region IV during the January 23 and 24, 1989, VSI of the U.S. Pipe and Foundry facilities. Observations and information gathered during the VSI are incorporated in the main body of the report.

VISUAL SITE INSPECTION SUMMARY

The following individuals participated in part or all of the January 23 and 24, 1989, Visual Site Inspection:

Alicia Thomas	U.S. EPA Region IV
Jim Childress	Tennessee Department of Health and Environment
Jeff Evans	A.T. Kearney/Centaur Division
Phebe Davol	A.T. Kearney/Centaur Division
Wayne Berry	U.S. Pipe and Foundry/Valve and Fittings Plant
J. J. Pikciunas	U.S. Pipe and Foundry/Soil Pipe Division
Daryl Tuttle	U.S. Pipe and Foundry/Soil Pipe Division
Don Wallace	U.S. Pipe and Foundry/General Office
John Watson	U.S. Pipe and Foundry/General Office
Jim Smallwood	U.S. Pipe and Foundry/Valve and Fittings Plant
Jim Book	U.S. Pipe and Foundry/ Valve and Fittings Plant

The VSI Team arrived at the U.S. Pipe and Foundry Fittings Plant office at 9:00 a.m. on January 23, 1989. The morning temperature was 35 degrees Fahrenheit with clear skies and light winds at five miles per hour. The team met with facility representatives in a conference room located in the central section of the Fittings Plant.

Phebe Davol explained the purpose of the VSI and asked U.S. Pipe and Foundry representatives to provide information requested in the facility notification letter. The Valve and Fittings plant facility representatives had most of the information requested in an organized manner. Since the tour of the Soil Pipe plant would be conducted on the following day, the information requested of that facility would be obtained then.

The inspection began in the Fittings Plant which is located in the south section of the property. In order to understand the process and waste generation points, the tour proceeded from the receipt of scrap material through the foundry process and finally to the treatment of baghouse dust.

The tour group adjourned for lunch at 12:00 p.m. The temperature remained cool for the remainder of the day with a high of 50 degrees Fahrenheit. Following lunch, the team and facility representatives toured the Valve Plant located in the central section of the facility. The tour began with the receipt of raw materials, through the foundry operations and ending with the final coating or blasting operations. The fire hydrant assembly testing area was also observed.

During the course of the day, the facility representatives provided the total acreage of each section of the facility. The Fittings Plant occupies 39.41 acres, the Valve plant occupies 12.98 acres, the Soil Pipe plant occupies 30.11 acres, the Landfill occupies 27.95 acres and the remaining acreage is for parking. The total acreage of the site is approximately 111 acres.

The tour concluded at 5:00 p.m. to be continued the following day.

January 24, 1989

The VSI team arrived at the Fittings Plant conference room at 9:00 a.m. on January 24, 1989. The temperature was approximately 40 degrees Fahrenheit with clear skies and light winds. After a preliminary meeting to discuss some information gaps from the following day, the inspection team revisited the area of the Former Scrubber, and the vehicle wash rack area where water was observed beneath the manway cover of an underground storage tank. The team then proceeded to the Landfill.

The tour adjourned for lunch at 11:30 a.m. Following lunch, the team met with Soil Pipe representatives to discuss information needs outlined in the facility notification letter. The tour began with the area where scrap material is delivered by railcar to the facility. A tour of the foundry operations was followed by inspection of the wastewater treatment system located at the south end of the property boundary. The tour concluded with inspection of the pipe coating and drying areas.

The tour concluded at 3:30 p.m., and a close-out meeting was held in the Soil Pipe conference room. Ms. Alicia Thomas of EPA explained that U.S. Pipe would be allowed to review the Interim RFA report prior to its finalization. U.S. Pipe representatives agreed that any contractor questions would be directed to Mr. John Watson at the General Office in Birmingham, Alabama. He would direct the questions to the appropriate person.

The inspection team departed at 4:00 p.m.

PHOTOGRAPH LOG

The photographs presented in the following log were taken with a Canon Sure Shot using 100 ASA film. Each SWMU is identified by a number. SWMUs with more than one photograph are identified with a number followed by a decimal and another number. For example, V-1.1 and V-1.2 are photographs for SWMU V-1. AOCs are designated with a letter.

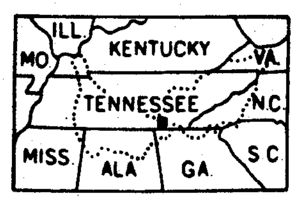
to an exemption provided by the Bevill Amendment. The U.S. EPA Region IV interpretation limits the exemption to utility companies. TDHE has not promulgated rules requiring the baghouse dust to be managed as a hazardous waste. However, TDHE has categorized the dust as a non-inert special waste. Special wastes are materials that have been tested and determined to be unsuitable for landfill disposal by without stabilization. On March 16, 1988, TDHE requested the State Attorney General to develop a formal legal opinion pertaining to the status of the baghouse dust (Reference 73). U.S. Pipe installed a Solifix treatment system which stabilizes the baghouse dust through the addition of a mixture of lime kiln dust, cement, and a proprietary liquid (Solifix) resulting in a non-leachable waste (Reference 71).

CLIMATE AND METEOROLOGY

The climate of Hamilton County, Tennessee, is characterized by very cool winters and very warm summers. Heavy precipitation is evenly distributed throughout the year as thunderstorms during summer and snow and rain during winter. Snow generally occurs in the mountains and persists only at the higher elevations. Annual precipitation is 52 inches with 46 percent falling between April and October. Chattanooga averages 55 thunderstorms per year. The average winter temperature is 41 degrees Fahrenheit and the average summer temperature is 71 degrees Fahrenheit (Reference 67).

TOPOGRAPHY, FLOOD PLAIN AND SURFACE WATER

The facilities are located at latitude 35° 01' 55" N and longitude 85° 19' 25" W and are 665 feet above sea level (Reference 66). The Landfill (SWMU F-27) is located within the 100- and 500-year flood plain, and the west section of the Soil Pipe Division is within the 500-year flood plain of the Tennessee River (Reference 68). Hamilton County has an abundant water supply with impoundments along the Tennessee River behind the Nickjack Dam from Marion County to Chattanooga and the Chickamuaga Dam from Chattanooga north to Rhea County, Tennessee. Many area streams flow year-round (Reference 67). Runoff from the Fittings Plant discharges to the Tennessee River at Mile 461.5 via NPDES-permitted outfalls 001 and 002 (Reference 54) (Refer to Figure II-1).



QUADRANGLE LOCATION

Figure II-1. Topographic Map of Area Surrounding U.S. Pipe Facilities in Chattanooga, Tennessee (Reference 66).

SOILS, GEOLOGY, AND HYDROGEOLOGY

The soils in the vicinity of the facilities are classified as Urban by the Hamilton County Soil Survey. Urban is defined as soils that are undefinable due to altering by excavation or being covered by buildings, sidewalls and streets (Reference 67). The facilities and the Landfill (SWMU F-27) are built upon foundry sand. The estimated depth of the foundry sand ranges from one to five feet. The soil beneath the foundry sands is an alluvial silt loam (Reference 13).

Approximately three-fourths of Hamilton County is part of the Valley and Ridge physiographic province. Located southwest of this province is the Cumberland Plateau physiographic province. The county is underlain by sedimentary rocks of the Paleozoic age. The sedimentary rocks consist of limestone, dolomite, shale and sandstone. Most of the limestone and dolomite belongs to the Knox group. Other limited areas are underlain by argillaceous limestone, non-calcareous shale, sandstone and interbedded areas consisting of sandstone and shale or limestone and shale. Generally, the rocks dip southeast. The facility is located at the foot of Lookout Mountain which is part of the Cumberland Plateau. Rocks beneath Lookout Mountain are sandstone, shale and a conglomerate of Pennsylvanian and Pennington coal and Newman limestone of Mississippian age (Reference 72).

According to the TDHE Landfill (SWMU F-27) site evaluation conducted in 1983, the bedrock is Fort Payne chert, Mississippian age limestone, and dolomite. Beneath the Fort Payne chert is Chattanooga shale which is brownish black, bituminous and fissle. The beds dip southeast. Some faulting and fracturing may have occurred when the Rockwood formation was thrust over the Fort Payne chert (Reference 13).

Ground water occurs in fractures formed during folding and faulting. In the Cumberland Plateau, the fractures are small and discontinuous, yielding small quantities of water from drilling. Fractures in dolomite and limestone in the Valley and Ridge province have been enlarged by percolating ground water. Wells drilled in these formations yield high quantities of ground water.

Wells drilled in the Chattanooga area yield 100 gallons per minute (gpm) when drilling near surface streams (Reference 72). According to the TDHE report, ground water beneath the Landfill (SWMU F-27) is shallow and affected by the river. The ground water flows toward the river. Deeper water is in the Fort Payne Chert and flows in a southeast direction (References 13 and 72).

OWNERSHIP AND REGULATORY HISTORY

The Fittings Plant was established in 1896 and operated as a gray foundry. The original founder consolidated in 1899 and became United States Cast Iron Pipe and Foundry Company. In 1969, the Jim Walter Corporation purchased the foundry and began producing ductile iron (Reference 70).

U.S. Pipe purchased the Valve Plant from the Mueller Company in 1968. The Valve Plant was previously a gray foundry, a non-ferrous foundry and a machining operation. In 1970, operations began at A.P. Smith, as a second facility for a New Jersey-based division of U.S. Pipe. The New Jersey plant closed in 1972 and moved to the Chattanooga facility. The Valve Plant is a non-ferrous foundry (brass and bronze) and an assembly and machining facility (Reference 70).

The Soil Pipe Division Plant was established in 1888. At that time, it was operating under the name of Casey-Hedges Company. The facility was a gray iron foundry producing soil pipes, horse troughs, and ornamental architectural castings. Following a merger, the Casey-Hedges Company became Combustion Engineering, Incorporated. The present plant was built in 1956 and was purchased by the Jim Walter Corporation in 1969. All U.S. Pipe facilities are divisions of Walter Industries, Incorporated (Reference 70).

In a letter dated September 29, 1981, TDHE stated that the Landfill (SWMU F-27) utilized by U.S. Pipe's Chattanooga facilities was in violation of EPA's flood plain and surface water criteria (References 14 and 46). The Landfill (SWMU F-27) is located within the 100- and 500-year flood plain of the Tennessee River (Reference 68). TDHE directed U.S. Pipe to conduct EP toxicity and phenol content analyses on proportional quantities of sand, slag, and cupola baghouse dust. The cupola baghouse dust was included in the testing requirements in the event EPA deemed the waste hazardous (Reference 46). The unit was included in EPA's Open Dump Inventory (Reference 11).

On July 27, 1983, a TDHE geologist submitted to the division a geological evaluation of the U.S. Pipe Landfill (SWMU F-27). According to the evaluation, the site was marginally acceptable for a solid waste landfill and suitable only for the disposition of foundry sands (Reference 13).

On August 22, 1983, while conducting a hazardous waste compliance evaluation, representatives of the Tennessee Department of Health and Environment (TDHE) noted that the facility had failed to make a hazardous waste determination of its cupola baghouse dust and failed to notify TDHE of that hazardous waste determination (Reference 11). A Notice of Violation (NOV) was issued by TDHE on September 8, 1983, directing the facility to make a hazardous waste determination of the cupola baghouse dust. Analysis of the baghouse dust indicated EP-toxic concentrations of cadmium at 2.78 parts per million (ppm) and lead at 21.1 ppm (Reference 11).

A Show Cause meeting was held on December 19, 1983, to discuss the NOVs and the status and disposition of the baghouse dust. U.S. Pipe maintained that the dust should be exempt since it is generated from fossil-burning furnaces. TDHE stated that that exemption applied only to utility companies and U.S. Pipe and Foundry had to begin proper disposal of the baghouse dust within 30 days (Reference 11). TDHE's position was reaffirmed in a letter to U.S. Pipe dated July 24, 1984 (Reference 9).

On August 24, 1984, attorneys for U.S. Pipe and Foundry filed a Response and Petition covering the status of the baghouse dust (Reference 8). Shortly thereafter, TDHE reversed its exemption position concerning U.S. Pipe and was supported by EPA. In a letter dated September 11, 1984, TDHE informed U.S.

Pipe that baghouse dust generated from burning fossil fuels was exempt from status as a hazardous waste. Attorneys for U.S. Pipe withdrew the Response and Petition on September 24, 1984 (Reference 75).

TDHE specifically stated in a letter dated October 16, 1984, and NOV dated December 14, 1984, that it would not approve of or permit the disposal of cupola baghouse dust at the on-site Landfill (SWMU F-27) because the waste exhibited EP-toxic characteristics. The NOV directed the facility to seek alternate disposal methods and to cease disposal of cupola baghouse dust at the Landfill (SWMU F-27) by January 19, 1985 (Reference 74).

Attorneys for U.S. Pipe filed a Response and Petition Request for Affirmative Relief, and a Petition for Stay on January 11, 1985, as a result of the NOV issued by TDHE on December 14, 1984. U.S. Pipe's attorneys objected to TDHE declaring the baghouse dust nonhazardous yet refusing the facility on-site disposal. Their position also cited the difficulty and cost of seeking alternative disposal methods (Reference 75).

Representatives of U.S. Pipe met with TDHE personnel on February 15, 1985, to discuss the January 19, 1985 deadline prohibiting disposal of baghouse dust on-site. The facility also sought approval for the dust to be exempt and managed as a Special Waste. TDHE determined that the facility should submit documentation of the exempt nature of its waste, but the NOV issued December 14, 1984, would remain effective. TDHE would also consider enforcement discretion provided that U.S. Pipe continued substantial progress toward permitting the Landfill (SWMU F-27) as a solid waste landfill and approved methods of disposal for the baghouse dust (Reference 74).

A project sponsored by EPA Region IV titled "Waste Sampling Investigation U.S. Pipe - Soil Pipe Plant" evaluated the EP toxicity of the cupola baghouse dust as well as that of samples taken from the Landfill (SWMU F-27). Both sources revealed EP-toxic levels of lead and cadmium in the dust and in the Landfill. Analysis of the baghouse dust indicated concentrations of 37 ppm lead and 1.6 ppm cadmium. Analysis of the sample from the Landfill (SWMU F-27) indicated concentrations of 7.7 ppm lead and 1.3 ppm cadmium. In a cover letter enclosed with the above study, EPA Region IV indicated the dust was a hazardous waste and subjected the facility to all interim status requirements under 40 CFR 265 (Reference 5). The EP-toxic nature of the dust was confirmed in the Final Report "Determination of Regulatory Status of Iron Foundries-U.S. Pipe and Valve Company," prepared for U.S. EPA Office of Solid Waste Programs Enforcement, October 19, 1987 (Reference 2).

In a letter dated March 16, 1988, TDHE requested that a formal legal opinion be developed by the State Attorney General concerning the regulatory status of baghouse dust generated by air pollution devices controlling emissions from fossil fuel-burning furnaces. The letter summarized the controversy, indicating that USEPA Region IV felt strongly that the baghouse dust was not exempt from hazardous waste requirements while TDHE had allowed the waste to be exempt (Reference 73).

Soil Pipe Division

From approximately 1964 to 1981, the Soil Pipe Division discharged all or part of its process waters to the Tennessee River via the Former Outfall (SWMU S-28) at river mile 462.4. According to the file review, the first permit was a State Tolerance permit issued by the State of Tennessee on June 2, 1965. The permit expired on June 2, 1970. The file material did not include any permits covering June 3, 1970, through June 21, 1975, when the facility was issued a temporary State permit 75-14 (References 24 and 25). Permit 75-14 established a schedule for the reduction of pollution concentrations by July 1, 1976. U.S. Pipe changed effluent plans and began discharging process water from the spinning mold operations through a Clarifier (SWMU S-22) to the POTW via the Sewer Sump (SWMU S-26). The facility was issued City of Chattanooga Wastewater Permit No. 6248 (References 26 and 29). The changes affected the parameters of permit 75-14, and the facility had to reapply for a new permit. On October 8, 1976, U.S. Pipe applied for a new permit but was denied on June 1, 1977, due to discharge violations occurring on November 9 and 10, 1976. The discharge exceeded limits for settleable solids, oil and grease, suspended solids, iron, zinc, F-1 UNIT NAME: Frag Pile

Unit Description: The unit is a scrap pile approximately 300 feet long and 100 feet wide located, along a railroad spur and in the vicinity of the cupola furnace. The scrap pile is the metallic source for the cupola furnace. The unit is located in the south section of the Fittings Plant facility.

Date of Start-Up: The unit has been active since 1977.

Date of Closure: The unit is active.

Waste Managed: The unit accumulates shredded automobile bodies (without motors) referred to as frag. The frag is loaded into the cupola via an electromagnet and a skip hoist. At a minimum, the frag contains primer paint and iron oxide.

Release Controls: There are no known release controls.

History of Releases: No evidence of release was noted during the VSI or identified in the file review.

Reference: 70

F-2 UNIT NAME: Non-Metallics Sump

Unit Description: The unit is a concrete sump located in the south section of the Fittings Plant Facility. The sump is approximately two feet long, five feet wide and two feet deep. The sump is emptied via an electric pump connected to three-inch-diameter metal piping approximately seven feet long. The unit collects precipitation from a railcar unloading hopper receiving raw materials for the cupola furnace. When the sump is full, the accumulated liquid is pumped out and discharged to the soil adjacent to the area.

Date of Start-Up: The unit has been active since 1971.

Date of Closure: The unit is active.

Waste Managed: The unit receives precipitation that comes in contact with limestone, coke, and ferrous silica. When the unit is full, the contents are pumped onto the surrounding soil.

Release Controls: There are no known release controls.

History of Releases: The unit has discharged water containing residual limestone, coke and ferrous silica to the surrounding soil since 1971. During the VSI, the soil at the point of discharge was stained with a dark gray colored residue.

Reference: 70

F-3 UNIT NAME: Slag Sump

Unit Description: The unit is a sump and drain designed to trap slag quenching water, from the cupola furnace, for recirculation. The sump is approximately four feet square and four feet deep. The L-shaped drain is approximately 20 feet long, two feet wide and two feet deep. The sump and drain are made of concrete. This unit is located in the vicinity of the cupola furnace in the south section of the Fittings Plant facility.

Date of Start-Up: The unit has been active since 1977.

Date of Closure: The unit is active.

Waste Managed: This unit manages slag quenching water used to cool cupola slag as it is skimmed off the surface of the molten metal. Water is periodically added to the unit to compensate for evaporation. Precipitation also drains into this unit.

Release Controls: Three are no known release controls. According to facility personnel, the unit is occasionally checked for cracks that may cause leaks. Integrity impairment would be determined by high-volume water loss.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

F-4 UNIT NAME: Vehicle Wash Area Sump

Unit Description: The unit is a concrete sump designed to trap runoff from vehicle washing operations. The sump is approximately 10 feet long, eight feet wide and five feet deep. An oil skimmer removes scum before the water is discharged to the Sanitary Sewer (SWMU F-18). This unit is located at the west exterior of the main foundry building in the central section of the Fittings Plant facility.

Date of Start-Up: The unit has been active since approximately 1981.

Date of Closure: The unit is active.

Waste Managed: The unit receives runoff from the vehicle washing pad. Runoff consists of oil, grease, detergent and water. Vehicles are cleaned with steam cleaners. The oil skimmer generates approximately 55 gallons of waste oil per month which is disposed off site by a waste oil management firm. At a minimum, the oil contains petroleum hydrocarbons and metals.

Release Controls: The oil skimmer serves as a release control.

History of Releases: The VSI team observed that the sump was not filled to the proper level to facilitate proper oil skimming. A nearby underground storage tank (AOC F-E) manway was filled with oily water indicating there may be a leak in the sump. Based on these observations, the integrity of this unit may be impaired.

Reference: 70

F-5 UNIT NAME: Oil/Water Separator

Unit Description: The unit is an oil/water separator located at NPDES permitted outfall 001. The unit is an above-ground tank consisting of 0.25-inch steel plate approximately six feet long, four feet wide and three feet tall. A small 10-gallon reservoir is located above the unit and is supported by one-inch angle iron. Approximately 10 feet of 0.5-inch-diameter tygon tubing loops between the tank and reservoir via two pulleys. The pulleys are powered by a small electric motor. Oil adheres to the surface of the tygon tubing. Oil is removed from the tubing by scrapers located above the reservoir. Other drippage is contained by the tank. The reservoir discharges into 55-gallon drums. This unit is located near the power house in the central section of the Fittings Plant facility.

Date of Start-Up: This unit has been operating since the late 1970s.

Date of Closure: The unit is active.

Waste Managed: This unit receives oily water from the facility's hydraulic water pump and compressors prior to discharge to the Tennessee River via Outfall 001 and the Storm Sewer (SWMU F-17). The oil collected in the reservoir is collected in drums for off-site disposal. At a minimum, oil contains petroleum hydrocarbons and metals.

Release Controls: Drippage that occurs during the skimming process is collected by the tank. Spills occurring near the drums are absorbed with oil dry. The unit is underlain by asphalt.

History of Releases: At the time of the VSI, an oil absorbent was observed on the asphalt immediately adjacent to the unit. The spill area was approximately 50 feet square. No evidence of release was identified in the file review.

Reference: 53 and 70

F-6 UNIT NAME: Solidification Discharge Area

Unit Description: The unit is a shed which receives treated baghouse dust from the facility's baghouse dust solidifier. The unit's floor and three walls are constructed of concrete approximately one foot thick. The east side of the unit is open to allow front-end loader access during unloading operations. The dimensions are approximately 12 feet long, 10 feet wide and 12 feet high. The unit's roof and upper walls are made of corrugated steel. This unit is located in the south section of the Fittings Plant facility.

Date of Start-Up: The unit has been active since October 1988.

Date of Closure: The unit is active.

Waste Managed: The unit receives four tons of treated baghouse dust per day. The dust is mixed with cement, solfix (sodium silicate) and water in the Cupola Baghouse Silo (SWMU F-20). Baghouse dust (containing lead and cadmium) is generated by the facility's cupola furnaces, brass and bronze melting areas and brass and bronze grinding/shot-blast areas.

Release Controls: There are no known release controls other than the fixed nature of the waste and the location of the unit on concrete.

History of Releases: During the VSI, the VSI team observed that the treated dust was on the outside of the concrete bin. Due to the lack of runoff controls, the solids could migrate away from the area and impact environmental media. No evidence of release was identified in the file review.

Reference: 55 and 70

F-7 through F-14 UNIT NAME: Waste Piles

Unit Description: The units are predominantly waste piles or waste mixing areas situated at various outdoor locations throughout the Fittings Plant facility. The waste piles are described in greater detail in Table B-1. All waste materials are disposed at the on-site Landfill (SWMU F-27).

Date of Start-Up: See Table B-1.

Date of Closure: All units are active.

Waste Managed: See Table B-1.

Release Controls: See Table B-1.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

TABLE B-1

FITTINGS PLANT WASTE PILES

Unit Number	Unit Name	Division/Location	Dimensions	Date of Start-Up	Waste Managed	Release Controls
F-7	Breaker Area	Fittings Plant/ east exterior of the main foundry building in the central section of the facility.	The unit is approximately 4000 square feet.	1972	This unit receives broken cores, green sand, reject casts, and slag. The area is inspected for large cores that can be recycled. Metal is recovered with an electromagnet.	The unit is underlain by concrete. Three sides of the unit are contained by the exterior foundry building wall.
F-8	Cement Waste Pile	Fittings Plant/ north of the cement lining shop in the north section of the facility.	The unit is approximately 100 square feet.	1960s	This unit receives waste cement and sand. Sand is reused and the waste cement is disposed at the on-site Landfill (SWMU F-27).	There are no known release controls.
F-9	Coke Bottom Drop Pile	Fittings Plant/ in the vicinity of the cupola furnace in the south section of the facility.	The unit is approximately 150 square feet.	1977	The unit receives unburned coke fines consisting of fixed carbon, ash, and 0.5 percent volatiles from the cupola furnace. Sand, limestone, and refractory chips, in addition to the above, are also received by this unit during weekly clean-out and recharge.	The unit is underlain by concrete of undetermined thickness and contained by three concrete walls approximately one foot thick.
F-10	Excess System Sand Pile	Fittings Plant/ between the cupola furnace and the Staging Area (SWMU F-14) in the south section of the facility.	The unit is approximately 1000 square feet.	1977	The unit stores excess foundry sand for mixing various foundry wastes such as Core Butts and slag at the Staging Area (SWMU F-14).	There are no known release controls.
F-11	Green Sand and Core Butt Discharge	Fittings Plant/ south exterior of the main foundry building in the central section of the facility.	The unit is approximately 100 square feet.	Mid 1960s	This unit is a collection point for core butts and green sand contaminated with core sand.	The unit is underlain by concrete of undetermined thickness.

TABLE B-1

FITTINGS PLANT WASTE PILES
(continued)

Unit Number	Unit Name	Division/Location	Dimensions	Date of Start-Up	Waste Managed	Release Controls
F-12	Shot-Blast Accumulation Area	Fittings Plant/ west exterior wall of the main foundry building.	The unit is approximately 100 square feet.	1974	This unit receives heavier particles of sand and steel shot not managed by the Pangborn Baghouse (SWMU F-26).	The unit is underlain by concrete of undetermined thickness and contained on the east side by the exterior foundry wall. The north and west sides are contained by concrete walls three feet tall and one foot thick.
F-13	Slag Accumulation Area	Fittings Plant/ in the vicinity of the cupola furnace located in the south section of the facility.	The unit is approximately 100 square feet.	1977	The unit receives cupola slag immediately after quenching. Quenching waters run off from the area and are collected by the Slag Sump (SWMU F-3).	The unit is underlain by a concrete floor of undetermined thickness and contained by three concrete walls approximately 10 feet tall and one foot thick. Quenching water is retained by the Slag Sump (SWMU F-3).
F-14	Staging Area	Fittings Plant/ at the south exterior wall of the shell and isocure core building in the south section of the facility.	The unit is approximately 1000 square feet.	1977	This unit receives spent system sand, broken cores and core butts, slag and coke bottom drop. These wastes are mixed with excess system sand by a front-end loader prior to truck loading. The mixed wastes are transported to the on-site Landfill (SWMU F-27).	The unit is underlain with a concrete floor of undetermined thickness and contained by three concrete walls approximately 12 feet tall and one foot thick.

F-15 UNIT NAME: Empty Drum Storage Area

Unit Description: The unit is an accumulation area for the facility's empty drums. The area is approximately 1000 square feet of mixed surfaces constructed of asphalt, concrete, and gravel. Finished products and empty drums are stored throughout the area. The drums were not rinsed prior to placement in the area. This unit is located in the west section of the Fittings Plant facility between the main foundry building and Interstate 24.

Date of Start-Up: This unit has been operating since at least 1978.

Date of Closure: The unit is active.

Waste Managed: The VSI team observed approximately 20 drums formerly used to contain 1,1,1-trichloroethane, zep cleaner solvent, and waste oil. The drums are transferred off-site by a drum reconditioner.

Release Controls: There are no known release controls.

History of Releases: The VSI team observed drums stored directly on the area surface. Some drums were stored horizontally and others appeared to be in poor condition. Dark, oily stains were observed within the vicinity of this area.

Reference: 70

F-16 UNIT NAME: Dip Tank Hoods

Unit Description: This unit consists of venting hoods for removing vapors associated with pipe fittings coating operations located in the north section of the Fittings Plant facility. The hoods are approximately 10 feet long, three feet wide and are vented to the atmosphere via a two-foot-diameter duct approximately 12 feet long. The material of construction is galvanized steel.

Date of Start-Up: The vents have been operating since 1987.

Date of Closure: The unit is active.

Waste Managed: Volatile organic vapors from the enamel paints contained in the facility's dipping tank are vented through these hoods. The enamel is mixed with 1,1,1-trichloroethane. Other vapors include xylene and toluene.

Release Controls: The C-HCAPCB limits VOC emissions from this unit, in combination with other surface coating operations, to 100 tons of VOCs per year.

History of Releases: No evidence of unregulated release was observed during the VSI or identified in the file review.

Reference: 70

F-17 UNIT NAME: Storm Sewer

Unit Description:	The unit is approximately 3000 feet of buried pipes located throughout the facility. Approximately half of the unit discharges to the Tennessee River via NPDES-permitted outfall 001, and the other half discharges to the Tennessee River via NPDES permitted outfall 002.
Date of Start-Up:	The unit has been operating since at least 1960.
Date of Closure:	The unit is active.
Waste Managed:	This unit receives runoff, once through non-contact cooling water (from hydraulic units and shell core machines), and cooling tower overflow.
Release Controls:	The Oil/Water Separator (SWMU F-5) removes oil from non-contact cooling water associated with the facility's hydraulic units.
History of Releases:	Runoff from this unit has exceeded NPDES-permitted limits for total settleable solids, oil and grease, and iron.
Reference:	48, 50 and 70

F-18 UNIT NAME: Sanitary Sewer

Unit Description:	The unit consists of pipes of varying ages, dimensions, and material of construction located throughout the Fittings and Valve Plant facilities.
Date of Start-Up:	The unit has been operating since the 1930s.
Date of Closure:	The unit is active.
Waste Managed:	The pipes receive facility-generated sewage and wash water from the Vehicle Washing Area Sump (SWMU F-4). At a minimum, the oil contains petroleum hydrocarbons and metals.
Release Controls:	Wastewaters from the vehicle washing area are processed through an oil skimmer prior to discharging into this unit.
History of Releases:	The Vehicle Wash Area Sump (SWMU F-4) appeared to be malfunctioning during the VSI. Excess oil and grease may be discharging to this unit.
Reference:	70

F-19 UNIT NAME: Roll-off Boxes

Unit Description: The units are steel dumpsters with capacities ranging approximately from 20 to 34 cubic yards. The units are located throughout the Fittings Plant facility.

Date of Start-Up: The units have been operating since, at a minimum, 1960.

Date of Closure: The units are active.

Waste Managed: The units receive office and lunchroom trash and all facility combustibles. Combustibles include cardboard and wood. The units also receive cardboard and plastic that has been coated with dry paint solids from the coating operations. The waste is transported off-site to the Hamilton County Landfill.

Release Controls: The units are positioned above ground and are located on asphalt, concrete, or gravel.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

F-20 UNIT NAME: Cupola Baghouse Silo

Unit Description: The unit is a steel silo approximately 25 feet tall and 12 feet in diameter. The unit houses cupola baghouse dust prior to solidification. The unit is connected to the Cupola Baghouse (SWMU F-21) via pneumatic pipes. Another pneumatic pipe is for connection to the Special Waste Truck (SWMU S-3). This unit is located in the vicinity of the cupola furnace located in the south section of the Fittings Plant facility.

Date of Start-Up: The unit has been operating since October 1988.

Date of Closure: The unit is active.

Waste Managed: The unit receives cupola baghouse dust containing 37 ppm lead and 1.6 ppm cadmium. The unit also receives baghouse dust for the brass and bronze foundry at the valve plant. Analysis of these Valve Plant brass wastes indicate concentrations ranging from two to three ppm lead.

Release Controls: This unit is a totally enclosed system and is underlain by concrete.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 55 and 70

F-21 through F-26 UNIT NAME: Baghouses

Unit Description:	The following units are air emission control units registered with the Chattanooga-Hamilton County Air Pollution Control Bureau.
Date of Start-Up:	See Table B-2.
Date of Closure:	See Table B-2.
Waste Managed:	See Table B-2.
Release Controls:	See Table B-2.
History of Releases:	See Table B-2.
Reference:	1, 4, 6, 10, 57, 61, 63, 64, 65, 66 and 70

TABLE B-2

FITTINGS PLANT BAGHOUSES

Unit Number	Unit Name	Division/Location	Dimensions/ Materials of Construction	Date of Start-Up	Date of Closure	Waste Managed	Release Controls C-HCAPCB Certificate	History of Release
F-21	Cupola Baghouse	Fittings Plant/ south of the cupola furnace located in the south section of the facility.	The unit has 21 compartments with 60 fiberglass bags per compartment. The housing is approximately 80 feet long, 20 feet wide, and 20 feet tall. The unit is elevated 15 feet above the concrete surface. The hoppers are connected to a pneumatic system via a screw conveyor.	1977	Active	Dust and particles produced from cupola exhaust gasses following quenching. EP toxic for lead and cadmium. Classified by TDHE as Special Waste.	The unit is self-contained. All waste is transferred to the fixation process via pneumatic pipes and screw conveyors. The unit is underlain by concrete.	Particulate releases are regulated by the C-HCAPCB.
F-22	Ductile Iron Baghouse	Fittings Plant/ east exterior of the main foundry building located in the central section of the facility.	The unit is 20 feet long, 8 feet wide, and 10 feet tall. The unit is elevated 10 feet above the concrete surface. There are nine hoppers discharging into trucks via canvas socks with close-pin fasteners. The baghouse utilizes dacron bags of an undertermined number.	1974 with additions in 1987	Active	Fine particles of sand and oxides of magnesium, iron, manganese, and calcium from the ductile iron area. Fine particles of sand, bituminous coal, and styrene betadiene, bentonite and wood-flour from the green sand system were ducted to this unit during 1987.	Self-contained unit underlain by concrete.	Particulate releases are regulated by the C-HCAPCB.
F-23	Former Scrubber	Fittings Plant/ south exterior of the main foundry building located in the central section of the facility.	The unit has been dismantled. It was a venturi-type scrubber approximately 20 feet tall.	1965	1985	Fine particles of sand, bituminous coal, and styrene betadiene, bentonite, and wood flour from the green sand system.	Location of the unit above ground.	Chronic violator of C-HCAPCB permit for percent opacity during 1985.

TABLE B-2

FITTINGS PLANT BAGHOUSES
(continued)

Unit Number	Unit Name	Division/Location	Dimensions/ Materials of Construction	Date of Start-Up	Date of Closure	Waste Managed	Release Controls C-HCAPCB Certificate	History of Release
F-24	Griffin Baghouse	Fittings Plant/ west of the main foundry building in the central section of the facility.	The unit is approximately 30 feet long, 10 feet wide, and 10 feet tall. The unit is elevated approximately 15 feet above the asphalt surface. There are four hoppers which discharge to small metal dumpsters. The unit uses an undetermined number of dacron bags.	1960s	Active	The unit receives fine particles released during shakeout. Primarily green sand consisting of silicon dioxide wood flour and bituminous coal.	The unit is self-contained and underlain by asphalt.	Particulate releases are regulated by the C-HCAPCB.
F-25	Number 9 Cyclone	Fittings Plant/ west exterior of the main foundry building in the central section of the facility.	The unit is approximately 20 feet long, 20 feet wide, and 15 feet tall. The unit is elevated 15 feet above the asphalt surface. The unit has seven hoppers.	1988	Inactive	Previously managed particles and dust from the green sand system. Dust consists of silicon dioxide. The facility is converting the unit into a cooling system.	Location of the unit above ground.	Particulate emissions were observed during the VSI. Particulates are regulated by the C-HCAPCB.
F-26	Pangborn Baghouse	Fittings Plant/ west exterior of the main foundry building in the central section of the facility.	The unit is approximately 10 feet long by 10 feet high. The unit is elevated 15 feet above the asphalt surface. The unit has 5 hoppers.	1985	Active	Fine particles of sand, cast iron, and grinding wheel abrasives.	Location of the unit above ground.	Particulate emissions were observed during the VSI. Particulates are regulated by the C-HCAPCB.

F-27 UNIT NAME: Landfill

Unit Description: The unit is a solid waste landfill located along the east bank of the Tennessee River. The unit is bounded to the north by the Soil Pipe Division, to the south by the Fittings Plant, and to the east by the Valve Plant. An elevated section of Interstate 24 transects this unit. The unit is 27.95 acres, rises approximately 30 feet above surface elevations, and consists of over 30 years of accumulated foundry waste, primarily sand. The current active face is the north side. The facility plans to extend the landfill to the south. Recent activities associated with state compliances have incorporated erosion controls and ground-water monitoring. Runoff from the active face flows to a gravel-lined ditch and collects in the Runoff Pond (SWMU F-28). This unit is managed by the Fittings Plant.

Date of Start-Up: The unit has been operating since approximately 1958.

Date of Closure: The unit is active.

Waste Managed: The unit receives approximately 48,000 tons of foundry waste per year consisting of approximately 77 percent system sand, consisting of residual phenolic-formaldehyde resin, including core butts. The remaining wastes include slag, unburned coke fines, dried paint and tar solids, clarifier sludge, broken refractories, shot blast waste and approximately three percent Special Wastes. These Special Wastes include cupola baghouse dust (EP toxic for lead and cadmium) and baghouse dust associated with the brass and bronze foundry operations.

Release Controls: Runoff and wind erosion are controlled by previously existing and planted vegetation. Runoff is also controlled by the Runoff Pond (SWMU F-28). The unit is unlined.

F-27 UNIT NAME: Landfill (cont'd)

History of Releases: Ground-water sampling and analyses conducted between April 1985 and October 1987 indicate average concentrations of 0.28 formaldehyde in the downgradient well compared to the upgradient well concentration of 0.08 ppm. Total lead and cadmium concentrations varied over the sampling periods. Average total organic carbon concentrations in the downgradient well were 210 ppm compared to 20 ppm in the upgradient well. See Attachment C for the analyses.

Reference: 3, 6, 8, 12, 45, 70 and 71

F-28 UNIT NAME: Runoff Pond

Unit Description: This unit is a runoff collection pond constructed of native soil. Rock-lined ditches extending approximately 150 feet to the active face, connect this unit to the Landfill (SWMU F-27) and to the Tennessee River. The pond is approximately 60 feet long, 40 feet wide, and four feet deep. The unit is located northwest of the Landfill approximately 50 feet east of the river.

Date of Start-Up: The pond has been operating since 1985.

Date of Closure: The unit is active.

Waste Managed: The pond receives runoff from the Landfill (SWMU F-27). Overflow from this unit discharges to the Tennessee River. According to facility representatives, sediment from this pond will be disposed of in the Landfill (SWMU F-27).

Release Controls: There are no known release controls.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 16 and 70

F-29 UNIT NAME: Landfill Discharge Ditch/Pipe

Unit Description: The unit is a ditch made of native soil and a 72-inch diameter corrugated metal pipe buried beneath the Landfill (SWMU F-27). The pipe is located beneath the Landfill (SWMU F-27) and receives infiltration from the landfill. The regulator chamber from the sanitary and storm sewer also discharges into the ditch. The ditch flows from north to south along the west side of the Landfill. The ditch discharges to the Tennessee River via a facility-installed 72-inch-diameter pipe, buried beneath the Landfill (SWMU F-27).

Date of Start-Up: The unit has been operating since 1977.

Date of Closure: The unit is active.

Waste Managed: During dry weather, combined sewer and storm water enter the POTW via the 21-inch-diameter sewer pipe. During wet weather overflow from the regulator chamber discharges to the Tennessee River via the ditch and 72-inch corrugated metal pipe beneath the Landfill (SWMU F-27).

Release Controls: There are no known release controls.

History of Releases: According to the landfill operators manual prepared by facility consultants (EDGE), the pipe installed by the facility is receiving rainwater that has infiltrated the Landfill (SWMU F-27). This pipe discharges to the Tennessee River during both wet and dry weather.

Reference: 7, 15, 70 and 71

F-A UNIT NAME: Hydraulic Oil Storage Area

Unit Description: The area is an outdoor storage rack located in the central section of the facility. The rack is approximately four feet long, ten feet wide and six feet tall and is constructed of three-inch angle iron. Drums of hydraulic oil are stacked horizontally up to three high. The rack elevates the drums above the asphalt. Staining or the integrity of the asphalt could not be determined due to the recent spreading of oil dry (Reference 70).

F-B through F-G UNIT NAME: Underground Tanks

Unit Description: The facility submitted Notification for Underground Storage Tanks on April 2, 1986. The tanks are presented in Table B-3, Fittings Plant Underground Storage Tanks (Reference 70).

TABLE B-3

FITTINGS PLANT UNDERGROUND STORAGE TANKS

Unit Number	Unit Name	Division/Location	Capacity	Date of Start-Up	Status	Contents	Materials of Construction	Piping
F-B	Cupola Fuel Oil Underground Tank No. 1	Fittings Plant/ vicinity of cupola in the south section of the facility.	20,000 gallons	1977	Active	Fuel Oil	Steel with external coating.	Vinyl-wrapped steel.
F-C	Cupola Fuel Oil Underground Tank No. 2	Fittings Plant/ vicinity of cupola in the south section of the facility.	20,000 gallons	1977	Active	Fuel Oil	Steel with external coating.	Vinyl-wrapped steel.
F-D	Underground Tank No. 3	Fittings Plant/ west section of the facility.	5,000 gallons	1976	Inactive since 1984.	Diesel	Steel with external coating.	Vinyl-wrapped steel.
F-E	Underground Tank No. 4	Fittings Plant/ vicinity of main-tenance shop in the west section of the facility.	15,000 gallons	1961	Active	Diesel man way filled with oily water.	Steel with external coating.	Bare steel.
F-F	Underground Tank No. 5	Fittings Plant/ vicinity of store-room in the south section of the facility.	1,000 gallons	1968	Active	Gasoline	Steel	Bare steel
F-G	Underground Tank No. 6	Fittings Plant/ vicinity of product storage room cen-tral section of the facility.	1,000 gallons	1968	Active	Gasoline	Steel with external coating.	Bare steel

F-H UNIT NAME: Coating Area

Unit Description: The VSI team noted two areas of staining in the vicinity of the coatings operations. One area was located outside a doorway by the dip tanks. The other area was beneath the Paint Tank intake fixture located on the west wall of the coatings building. Both areas are outdoors. The area may be underlain by asphalt or concrete. The integrity or composition could not be determined due to the build-up of foundry sand (Reference 70).

V-1 UNIT NAME: Cabinet Cleaning Area Drain

Unit Description: The unit is a drain for collecting runoff and precipitation near the Cabinet Cleaning Baghouse (SWMU V-10). The unit is approximately ten feet long, one foot wide and six inches deep. The drain is constructed of concrete and is covered with a metal grate. This unit is located outdoors, near the entrance to the shot-blast area, in the south section of the Valve Plant facility. The unit is reportedly a blind sump which has no discharge point.

Date of Start-Up: This unit has been operating since 1987.

Date of Closure: The unit is active.

Waste Managed: The drain receives runoff and precipitation in the vicinity of the Cabinet Cleaning Baghouse. According to facility representatives, the contents of the unit evaporate.

Release Controls: There are no known release controls.

History of Releases: Oily stains were observed on the concrete surrounding the unit. Facility representatives did not identify the source of stains.

Reference: 70

V-2 UNIT NAME: Hydrant Testing Sump

Unit Description: The unit is a sump and drain made of concrete and covered with a metal grate. The drain is approximately 20 feet long, one foot wide, and one foot deep. The sump is approximately eight feet long, five feet wide, and three feet deep. Fire hydrants are filled with water and tested for leaks. The contents of the hydrants and associated leakage are contained by the drains. The water collected by the sump is recirculated. The unit is in the Hydrant Assembly Area located in the east section of Valve Plant facility.

Date of Start-Up: The unit has been active since 1978.

Date of Closure: The unit is active.

Waste Managed: The unit receives hydrant testing water that appeared oily and rusty, at the time of the VSI. The unit is also in the vicinity of a Paint Booth (SWMU V-6) and may be receiving fugitive sprays containing toluene, xylene, and 1,1,1-trichloroethane.

Release Controls: There are no known release controls.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

V-3 UNIT NAME: Lead Dross Drum Area

Unit Description: The unit is a temporary holding area for 35-gallon drums containing lead dross. Dross is periodically skimmed off a small lead pot maintained by the Valve Plant. The area is located in the central section of the Valve Plant facility.

Date of Start-Up: The unit has been operating since 1978.

Date of Closure: The unit is active.

Waste Managed: The unit temporarily stores drums of lead dross. Analyses of lead dross from facility operations indicate 38 ppm lead. Drums containing dross are transported off-site by and for R. Lavin and Sons, Incorporated, Chicago, Illinois. The facility generates approximately 2000 pounds of dross per year. Scrap brass is also stored in this area.

Release Controls: The unit is located indoors and is underlain by concrete.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 47 and 70

V-4 UNIT NAME: Lead Melting Pot Area

Unit Description: The unit is a small working area in the vicinity of the lead melting pot. A small hood approximately one foot in diameter vents the lead emissions to the atmosphere. This unit is located in the central section of the facility. Emissions through the exhaust hood are regulated by C-HCAPCB.

Date of Start-Up: The unit has been operating since 1977.

Date of Closure: The unit is active.

Waste Managed: This unit manages emissions from the lead melting pot. Lead spillage is scraped from the floor and returned to the melting pot.

Release Controls: The unit is located indoors on a concrete slab that was free of cracks or gaps at the time of the VSI.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 47 and 70

V-5 UNIT NAME: Transfer Dumpsters

Unit Description: The units are three small metal dumpsters approximately three feet long, six feet wide, and three feet deep. The dumpsters are filled with excess system sand and core butts and then transferred to the Fittings Plant Staging Area (SWMU F-14). The units are stored in the northwest section of the Valve Plant facility.

Date of Start-Up: The facility has used these dumpsters since the 1970s.

Date of Closure: The units are active.

Waste Managed: The dumpsters are filled with excess system sand and core butts from the foundry operations. The units are filled via a front-end loader, and are transferred to the Fittings Plant Staging Area (SWMU F-14) for removal to the Landfill (SWMU F-27).

Release Controls: These units are enclosed on all sides and elevated above the ground.

History of Releases: During the VSI, excess system sand was noted on the ground adjacent to the dumpsters. No evidence of release was identified in the file review.

Reference: 70

V-6 UNIT NAME: Paint Booths

Unit Description: The two units are water curtain paint booths. The units are approximately eight feet long, ten feet wide, and ten feet tall. The water reservoir is approximately two feet long, ten feet wide, and two feet tall. Excess atomized paint sprays are drawn to water falling behind the products during spray operations. The water is contained in a reservoir and recirculated. Paint waste accumulates on the water surface.

Date of Start-Up: The units have been operating since 1978.

Date of Closure: The units are active.

Waste Managed: These units manage paint waste from the spray painting operations. Paint waste consists of toluene, xylene, and 1,1,1-trichloroethane. Paint waste is skimmed off the water surface of the reservoir, discharged into a pail and allowed to dry. The contents are disposed at the Landfill (SWMU F-27). Excess paint spray, not managed by the reservoirs, is collected on cardboard lining the floor of the unit. The cardboard is periodically replaced. Waste cardboard is deposited in the Roll-off Boxes (SWMU F-19) for off-site disposal.

Release Controls: The units are located indoors on a concrete floor.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 57 and 70

V-7 through V-11 UNIT NAME: Baghouses

Unit Description: The following units are air emission control units registered with the Chattanooga-Hamilton County Air Pollution Control Bureau.

Date of Start-Up: See Table B-4.

Date of Closure: See Table B-4.

Waste Managed: See Table B-4.

Release Controls: See Table B-4.

History of Releases: See Table B-4.

Reference: 6, 60 and 70

TABLE B-4

VALVE PLANT BAGHOUSES

Unit Number	Unit Name	Division/Location	Dimensions/ Materials of Construction	Date of Start-Up	Date of Closure	Waste Managed	Release Controls C-HCAPCB Certificate	History of Release
V-7	Brass Foundry Baghouse	Valve and Hydrant Plant/ south exterior of the brass foundry in the south section of the facility.	The unit is approximately 12 feet long, eight feet high and four feet wide. The unit discharges to a screw conveyor which discharges to a hopper. The hopper is portable and is moved to facilitate access by the Special Waste Truck (SWMU S-3).	1970	Active	Dust, ash, and gasses from brass and bronze melting operations. Analysis of waste indicates 2-5 ppm lead. Classified by TDHE as a Special Waste.	Location of the unit above ground.	The VSI team observed dust accumulating beneath the unit.
V-8	Brass Grinding Baghouse	Valve and Hydrant Plant/ west exterior of the offices in the east section of the facility.	The unit is eight feet long, four feet wide and eight feet tall. The unit has two hoppers. The hoppers each discharge to another hopper. These hoppers are portable and are moved to facilitate access by the Special Waste Truck (SWMU S-3).	1970s	Active	Fine particles of brass and bronze, sand, and abrasives from grinding operations. Analysis of waste indicates 3.1 ppm lead. Classified by TDHE as a Special Waste.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file review.
V-9	Brass Shot-Blast Baghouse	Valve and Hydrant Plant/ west exterior of the offices in the east section of the facility.	The unit is eight feet long, four feet wide and eight feet tall. The unit has two hoppers. The hoppers each discharge to another hopper. These hoppers are portable and are moved to facilitate access by the Special Waste Truck (SWMU S-3).	1970	Active	Fine particles of brass and bronze, sand from shot-blast operations. Analysis of grinding waste indicates 3.1 ppm lead. Classified by TDHE as a Special Waste.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file review.

TABLE B-4

VALVE PLANT BAGHOUSES
(continued)

Unit Number	Unit Name	Division/Location	Dimensions/ Materials of Construction	Date of Start-Up	Date of Closure	Waste Managed	Release Controls C-HCAPCB Certificate	History of Release
V-10	Cabinet Cleaning Baghouse	Valve and Hydrant Plant/ north of the small valve storage building in the south section of the facility.	The unit is four feet long, four feet wide and six feet tall. The unit has one hopper.	1988	Active	Fine particles of cast iron, black beauty from the shot blast machines.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file review.
V-11	Shell Mold Baghouse	Valve and Hydrant Plant/ south of the brass foundry in the southwest section of the facility.	The unit is four feet long, four feet wide and six feet tall. The unit has one hopper.	1970s	Active	Particles of sand from the shell mold system including phenol/formaldehyde, hexamethylenetetramine and iron oxide.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file review.

V-A UNIT NAME: Underground Tank No. 8

Unit Description: The area is an untested 1000-gallon underground storage tank containing diesel fuel. The tank is made of steel with an exterior coating. The tank is located in the northwest section of the Valve Plant facility. The unit has been active since 1984 (Reference 70).

V-B UNIT NAME: Compressor Area

Unit Description: The VSI Team noted a 15-square-foot area of the asphalt pavement was heavily stained with a black, oily substance of unspecified origin in the vicinity of the compressor shed. This area is in the central section of the valve plant. The area is in an alleyway utilized by the facility for storing oil-coated metal stock. Facility representatives were unable to determine what may have been stored in the area at the time of the staining (Reference 70).

S-1 UNIT NAME: Scrap Metal Pile

Unit Description: The units are scrap metal piles located, within access of the craneway along the east section of the Soil Pipe Division facility. The area of the combined piles is approximately 5000 square feet. The scrap is the metallic source for the cupola furnaces. The unit is underlain by soil.

Date of Start-Up: The unit has been active since 1956.

Date of Closure: The unit is active.

Waste Managed: The unit receives scrap iron including engine blocks.

Release Controls: There are no known release controls.

History of Releases: The VSI Team observed oil-contaminated engine blocks and exhaust systems scattered throughout the scrap piles.

Reference: 70

S-2 UNIT NAME: Soil Pipe Roll-off Box

Unit Description: The unit is a steel dumpster with a capacity of 30 cubic yards. The unit is located in the middle of the craneway in the east section of the facility.

Date of Start-Up: The unit has been active since 1956.

Date of Closure: The unit is active.

Waste Managed: The unit receives office and lunchroom trash and all facility combustibles. The combustibles are cardboard and wood. The waste is transported off-site to the Hamilton County Landfill.

Release Controls: The unit is self-contained and elevated above the ground.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

S-3 UNIT NAME: Special Waste Truck

Unit Description: The unit is a pneumatic tank truck maintained by the Soil Pipe Division. The tank's capacity is approximately 12 to 15 cubic yards. A pneumatic intake located on top of the tank is designed to attach to the Soil Pipe Cupola Baghouse (SWMU S-11) and to the hoppers beneath the Brass Foundry Baghouse (SWMU V-7), the Brass Grinding Baghouse (V-8), and the Brass Shot-Blast Baghouse (SWMU V-9). The outtake is designed to attach to the pneumatic pipe connected to the Cupola Baghouse Silo (SWMU F-20). This unit, when not in operation, is located at the maintenance shop in the north section of the Soil Pipe Division.

Date of Start-Up: The unit has been operating since October 1988.

Date of Closure: The unit is active.

Waste Managed: The unit receives and transports baghouse dusts, classified as a TDHE Special Waste, generated by the Soil Pipe Division and the Valve Plant. These Special Wastes are contaminated with lead and cadmium.

Release Controls: The tank is a self-contained unit located above ground.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

S-4 UNIT NAME: Shop Sump

Unit Description:	The unit is a concrete sump located adjacent to the vehicle maintenance shop in the north section of the facility. The sump is approximately two feet long, two feet wide, and two feet deep.
Date of Start-Up:	The unit has been active since 1956.
Date of Closure:	The unit is active.
Waste Managed:	The unit receives water, detergent, grease and oil from the vehicle washing area. The unit also receives runoff. At a minimum, oil contains petroleum hydrocarbons and metals.
Release Controls:	There are no known release controls.
History of Releases:	The VSI team noted the sump was filled with oily water. It could not be determined where the water discharges.
Reference:	70

S-5 UNIT NAME: Slag Sump

Unit Description: The unit is a concrete sump designed to trap slag quenching water for recirculation. The sump is approximately 20 feet long, 10 feet wide, and eight feet deep. This unit is located in the vicinity of the cupola furnace in the northeast section of the facility.

Date of Start-Up: The unit has been active since 1956.

Date of Closure: The unit is active.

Waste Managed: This unit manages slag quenching water used to cool slag as it is skimmed off the surface of the molten metal. Overflow from this unit discharges to the Number 17 Pit (SWMU S-20).

Release Controls: There are no known release controls.

History of Releases: The VSI team observed that the concrete walls were cracked in several places.

Reference: 30, 34 and 70

S-6 UNIT NAME: Waste Oil Area

Unit Description: The unit is a drum storage area which is approximately 150 square feet. Fifty-five-gallon drums of waste oil are stored on pallets stacked two high. This unit is located outdoors near the truck and employee entrance in the east section of the facility.

Date of Start-Up: This unit has been active since 1987.

Date of Closure: The unit is active.

Waste Managed: The unit accumulates 55-gallon drums of waste oil. Approximately 30 drums were observed during the VSI. The drums of waste oil are transferred off-site. At a minimum, the oil contains petroleum hydrocarbons and metals.

Release Controls: The unit is underlain by asphalt.

History of Releases: Dark, oily stains were observed on the asphalt during the VSI.

Reference: 70

S-7 UNIT NAME: Large-Diameter Pipe Drying Areas

Unit Description: The units are drying racks and drip collecting areas for large-diameter five- and 10-foot pipes. The unit consists of four concrete walls approximately 20 feet long, three feet tall, and one foot thick. Wood is placed on top of the walls for protection. The walls are spaced far enough apart to keep the pipes elevated above the drying area. Slag or sand is spread between the walls to collect the paint drippage. The units are located at the fittings storage area in the south central section of the facility.

Date of Start-Up: The units have been active since at least 1975.

Date of Closure: The units are active.

Waste Managed: The units receive drippage from freshly dipped pipes. The paint is an asphalt and naphtha mixture. The volatiles evaporate and the dried paint/slag or paint/sand mixture is disposed at the Landfill (SWMU F-27). Contaminated wooden timbers are disposed in the Soil Pipe Roll-off Box (SWMU S-2).

Release Controls: The unit is underlain by concrete.

History of Releases: Black, asphaltic stains were observed outside the drip pans.

Reference: 70

S-8 UNIT NAME: Small-Diameter Pipe Drying Areas

Unit Description: The units are drying racks and drip collecting areas for small-diameter five- and 10-foot pipes. The units consist of large timbers approximately 10 feet long placed end to end. Rows of timbers are spaced far enough apart to keep the pipes elevated above the asphalt. Metal troughs approximately eight feet long, one foot wide, and eight inches deep collect drippage from the ends of the pipes. The units occupy approximately 500 square feet. The units are located in the vicinity of the paint dipping operations in the north section of the facility.

Date of Start-Up: The units have been active since 1956.

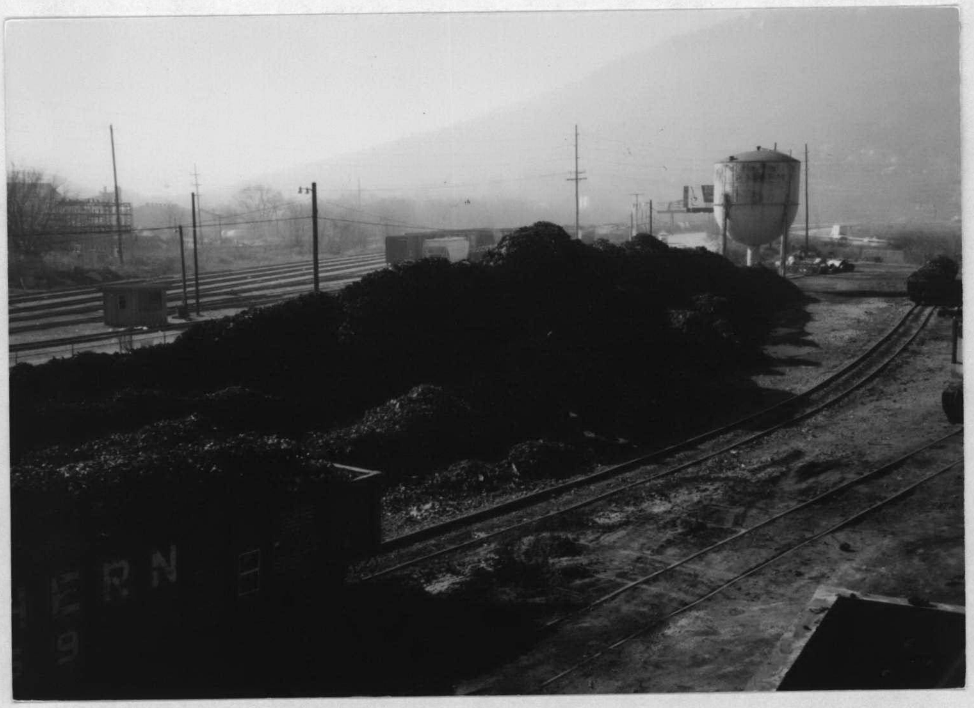
Date of Closure: The units are active.

Waste Managed: The units receive paint drippage consisting of asphalt and naphtha solvent. Volatiles and accumulated precipitation evaporate. The solids are scraped from the troughs and disposed of at the Landfill (SWMU F-27).

Release Controls: The units are underlain by asphalt. Spilled paint is absorbed with excess foundry sand and disposed of at the Landfill (SWMU F-27).

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70



F-1 View of the Frag Pile (SWMU F-1) facing south. Note the scrap metal is transported to the facility by railcar as shown in the lower left corner of the photograph.

F-2.1 View looking down inside the Non-Metallics Sump (SWMU F-2). Note rainfall collects in the trough in the center of the photograph and is removed via the pump and pipe system.

F-2.2 The discharge point (indicated by an arrow) for the collected precipitation is the ground outside the Non-Metallics Sump (SWMU F-2) as seen in this photograph, taken facing west. Note the soil is discolored.

F-3 View of the Slag Sump (SWMU F-3), facing north. Note the sump is covered with a steel grate. The steam emanating from the sump is normal from the addition of water to the molten slag.

F-4.1 View of the Vehicle Wash Area Sump (SWMU F-4), facing west. Note the oily sheen on the water surface and the oil stains on the concrete sides.

F-4.2 View of the drums used for the collection of skimmed oil from the Vehicle Wash Area Sump (SWMU F-4), facing southwest. Note the staining around the base of the concrete dike and on the concrete adjacent to the drums.

F-4.3 View of the drain for the Vehicle Wash Area Sump (SWMU F-4), facing west. The drain discharges separated water to the Sanitary Sewer (SWMU F-18). Note the bottom of the overflow area appears oily.

F-5.1 Overview of the Oil/Water Separator (SWMU F-5), facing southwest. Note the sorbent material around the base of the unit.

S-9 UNIT NAME: Paint Dip Traps

Unit Description: The units are drippage collecting troughs. The units are made of steel and are approximately 10 feet long, 18 inches wide and eight inches deep. The troughs are placed beneath the paint dipping line to collect drippage from small pipes and valves after they have been dipped in paint. These units are located at the west exterior wall of the main foundry building in the north section of the facility.

Date of Start-Up: The units have been active since 1956.

Date of Closure: The units are active.

Waste Managed: The units receive drippage containing asphalt and naphtha. The volatiles are allowed to evaporate and the dried solids are scraped from the units and disposed of at the Landfill (SWMU F-27).

Release Controls: The units are underlain by asphalt and located beneath an overhang.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

S-10 UNIT NAME: Naphtha/Asphalt Sump

Unit Description: The unit is a sloped concrete sump approximately 10 feet long, 10 feet wide and four feet deep. The sump is situated between Underground Tank No. 5583 (AOC S-B) and the above-ground asphalt tank. This unit is located at the concrete slab fittings storage area in the central section of the facility. An earthen dike of road base material had recently been placed on the south side of the above-ground asphalt tank.

Date of Start-Up: The sump has been active since 1956.

Date of Closure: The unit is active.

Waste Managed: The unit receives drippage consisting of naphtha and asphalt. The volatiles evaporate. The sump is scraped and the solids are disposed of at the Landfill (SWMU F-27).

Release Controls: There are no known release controls.

History of Releases: The sump was heavily stained with asphalt and naphtha. A solvent odor was also noted during the VSI.

Reference: 70

S-11 through S-15 UNIT NAME: Baghouses

Unit Description:	The following units are air emission control units registered with the Chattanooga-Hamilton County Air Pollution Control Bureau.
Date of Start-Up:	See Table B-5.
Date of Closure:	See Table B-5.
Waste Managed:	See Table B-5.
Release Controls:	See Table B-5.
History of Releases:	See Table B-5.
Reference:	1, 6, 37, 40, 42, and 70

TABLE B-5

SOIL PIPE DIVISION BAGHOUSES

Unit Number	Unit Name	Division/Location	Dimensions/ Materials of Construction	Date of Start-Up	Date of Closure	Waste Managed	Release Controls C-HCAPCB Certificate	History of Release
S-11	Soil Pipe Cupola Baghouse	Soil Pipe Division/ northeast exterior of the main Foundry Building in the northeast section of the facility.	The unit has 21 components with 60 fiberglass bags per compartment. The housing is approximately 80 feet long, 20 feet wide and 20 feet tall. The unit is elevated 15 feet above the surface. The hoppers discharge to a conveyor which discharges to the Special Waste Truck (SWMU S-3).	1971	Active	Dust and particles produced from cupola exhaust gasses following quenching. EP toxic for lead and cadmium. Classified by TDHE as a Special Waste.	Location of the unit above ground.	Chronic violator of C-HCAPCB permit conditions during 1983.
S-12	DCE Vokes Baghouse	Soil Pipe Division/ east exterior of the core room in the northeast section of the facility.	The unit is approximately 15 feet long, three feet wide and 15 feet tall. The unit is constructed on a concrete pad elevating the unit approximately one foot above the foundry yard. The unit has eight hoppers discharging into five-gallon pails.	1981	Active	Dust from the mullers and rotary screens managing the green sand system. Particles consist of silicon dioxide, bituminous coal and styrene butadiene, bentonite, and wood flour.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file material.
S-13	Soil Pipe Griffin Baghouse	Soil Pipe Division/ southeast exterior of the main foundry building in the northeast section of the facility.	The unit is 20 feet long, eight feet wide and eight feet tall. Four hoppers discharge into two dumpsters via Y-shaped ducting.	1979	Active	Dust and gasses from diasamatic pouring and shake-out consisting of silicon dioxide, bituminous coal and styrene butadiene, bentonite, wood flour, phenol-formaldehyde, hexa-methylene-tetramine.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file material.

TABLE B-5

SOIL PIPE DIVISION BAGHOUSES
(continued)

Unit Number	Unit Name	Division/Location	Dimensions/ Materials of Construction	Date of Start-Up	Date of Closure	Waste Managed	Release Controls C-HCAPCB Certificate	History of Release
S-14	Sly 79 Baghouse	Soil Pipe Division/ north exterior of the main foundry building in the northeast section of the facility.	The unit is approximately 25 feet long, eight feet wide and eight feet high. The unit has three hoppers. The unit is elevated approximately 10 feet above the surface.	1985	Active	Dust from the shell sand coating system consisting of silicon dioxide, phenol/formaldehyde, hexamethylene-tetramine, and iron oxide.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file review.
S-15	Zurn Baghouse	Soil Pipe Division/ west exterior of the main foundry building in the northeast section of the facility.	The unit is 12 feet long, six feet wide and 10 feet tall. The unit has one hopper and discharges via a screw conveyor. The unit discharges into a small dumpster.	1981	Active	Fine particles of sand, cast iron, and grinding wheel abrasives.	Location of the unit above ground.	No evidence of release was observed during the VSI or identified in the file review.

S-16 through S-19 UNIT NAME: Waste Piles

Unit Description:	The units are waste piles for storing or mixing foundry wastes, such as sand and spent Core Butts, prior to disposal at the on-site Landfill (SWMU F-27).
Date of Start-Up:	See Table B-6.
Date of Closure:	The units are active.
Waste Managed:	See Table B-6.
Release Controls:	See Table B-6.
History of Releases:	No evidence of release was observed during the VSI or identified in the file review.
Reference:	70

TABLE B-6

SOIL PIPE DIVISION WASTE PILES

Unit Number	Unit Name	Division/Location	Dimensions/ Materials of Construction	Date of Start-Up	Waste Managed	Release Controls C-HCAPCB Certificate	History of Release
S-16	Coke Bottom Drop Pile	Soil Pipe Division/ in the vicinity of the cupola furnace in the northeast section of the facility.	The unit is approximately 150 square feet.	1956	The unit receives unburned coke fines consisting of fixed carbon, ash, and 0.5 percent volatiles from the cupola furnace. Sand, limestone, and refractory chips are also received by this unit during weekly cleanout and recharge.	The unit is underlain by concrete of undetermined thickness and contained by the east wall of the main foundry building.	No evidence of releases was observed during the VSI or identified during the file review.
S-17	Slag Accumulation Area	Soil Pipe Division/ east of the main foundry building in the northeast section of the facility.	The unit is approximately 150 square feet.	1956	The unit receives cupola slag after quenching and prior to mixing at the Soil Pipe Staging Area (SWMU S-19).	The unit is underlain by concrete and is contained by the main foundry exterior walls.	No evidence of releases was observed during the VSI or identified during the file review.
S-18	Slag Pile	Soil Pipe Division/ in the vicinity of the cupola furnace in the northeast section of the facility.	The unit is approximately 25 square feet.	1956	The unit receives quenched slag, and slag quenching water. The slag is transported to the Slag Accumulation Area (SWMU S-17) and the quenching water is collected by the Slag Sump (SWMU S-5).	The unit is underlain by concrete of undetermined thickness.	No evidence of releases was observed during the VSI or identified during the file review.
S-19	Soil Pipe Storage Area	Soil Pipe Division/ located in the middle of the cranway in the east section of the facility.	The unit is approximately 800 square feet.	1979	This unit receives spent system sand, broken cores and core butts, slag, and coke bottom drop. The wastes are mixed with a front-end loader prior to truck loading. The mixed wastes are transported to the on-site Landfill (SWMU F-27).	The system is underlain by concrete of underdetermined thickness.	No evidence of releases was observed during the VSI or identified during the file review.

S-20 UNIT NAME: Number 17 Pit

Unit Description: The unit is a concrete sump approximately four feet long, three feet wide, and three feet deep. The unit receives spent release agent waters from the facility's spinning molds. This unit is located on the main floor of the foundry building in the northeast section of the Soil Pipe facility.

Date of Start-Up: This unit has been operating since the 1960s.

Date of Closure: The unit is active.

Waste Managed: The unit receives slurries containing silica flour and bentonite used as release agents for the permanent spinning molds. The unit also receives overflow from the Slag Sump (SWMU S-5). A 300 gpm pump discharges the contents of the unit to the Clarifier (SWMU S-22) via the Wastewater Pipes (SWMU S-21).

Release Controls: There are no known release controls.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 27 and 70

S-21 UNIT NAME: Wastewater Pipes

Unit Description: The unit includes an underground ductile iron pipe connecting the Number 17 Pit (SWMU S-20) to the Clarifier (SWMU S-22). The six-inch-diameter pipe is approximately 500 feet long. The unit runs north/northeast to south/southwest. A six-inch-diameter pipe returns the treated water to the spinning mold line.

Date of Start-Up: This unit has been operating since 1976.

Date of Closure: The unit is active.

Waste Managed: This unit conveys a slurry consisting of water, silica flour, bentonite, and some slag sump overflow. The slurry is transferred from the Number 17 Pit (SWMU S-20) to the Clarifier (SWMU S-22) via this unit. The flow rate is approximately 300 to 400 gpm. The Cooling Tower Sump (SWMU S-25) discharges to the return pipe for reuse in the spinning mold line.

Release Controls: There are no known release controls.

History of Releases: Due to the underground location of the unit, no evidence of release was observed. No releases were identified in the file review.

Reference: 70

S-22 UNIT NAME: Clarifier

Unit Description: The unit is a steel reinforced tank thirty feet in diameter and approximately 12 feet tall. This unit separates the solid portion of the slurry (underflow) from the liquid portion of the slurry (overflow). Overflow from this unit is discharged to the Cooling Tower (SWMU S-24) and underflow is discharged to the Sludge Drying Beds (SWMU S-23). This unit is located in the south section of the Soil Pipe facility.

Date of Start-Up: The unit has been operating since 1976.

Date of Closure: The unit is active.

Waste Managed: This unit receives a slurry containing water, silica flour, bentonite, and some slag sump overflow from the Wastewater Pipes (SWMU S-21) at a rate of approximately 300 to 400 gpm. The underflow consists of silica flour and bentonite and is discharged to the Sludge Drying Beds (SWMU S-23). The overflow is primarily water and is discharged to the Cooling Tower.

Release Controls: There are no known release controls.

History of Releases: Cracks and seepage were observed on the exterior of this unit. According to facility representatives, this unit will be replaced by a new clarifier with a greater capacity.

Reference: 27, 28 and 70

S-23 UNIT NAME: Sludge Drying Beds

Unit Description: The units are two sludge drying beds approximately 80 feet long, 20 feet wide, and three feet deep. The beds are made of concrete approximately one foot thick. Sludge is pumped to the unit from the Clarifier (SWMU S-22). The units are located in the south section of the Soil Pipe facility.

Date of Start-Up: The units have been active since 1976.

Date of Closure: The units are active.

Waste Managed: The units receive underflow from the Clarifier (SWMU S-22) containing silica flour and bentonite. Both units generate 625 cubic yards of sludge per year. The units are unloaded via front-end loaders and trucks. The sludge is disposed at the on-site Landfill (SWMU F-27). Analysis of the sludge indicates 0.2 ppm lead and 0.1 ppm cadmium.

Release Controls: There are no known release controls.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 27, 28 and 70

S-24 UNIT NAME: Cooling Tower

Unit Description: The unit is approximately 10 feet long, eight feet wide, and six feet tall. The water intake is located on the top of the unit. Water is cooled as it trickles over baffles within the unit. The west side of the unit is slotted to allow air to aid cooling. Beneath the unit is the Cooling Tower Sump (SWMU S-25). This unit is located in the south section of the Soil Pipe facility.

Date of Start-Up: This unit has been active since 1978.

Date of Closure: The unit is active.

Waste Managed: The unit receives overflow water from the Clarifier (SWMU S-22). The unit discharges to the Cooling Tower Sump (SWMU S-25).

Release Controls: There are no known release controls.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 34 and 70

S-25 UNIT NAME: Cooling Tower Sump

Unit Description: The unit is a sump made of concrete approximately six inches thick. The unit is approximately 14 feet long, nine feet wide, and three feet deep. This unit receives water from the Cooling Tower (SWMU S-24). This unit is located in the south section of the Soil Pipe facility.

Date of Start-Up: This unit has been operating since 1978.

Date of Closure: The unit is active.

Waste Managed: This unit receives water from the Cooling Tower (SWMU S-24). The water is returned to the spinning mold line via the Wastewater Pipes (SWMU S-21). Overflow is discharged to the Sanitary Sewer (SWMU S-27) via the Sewer Sump (SWMU S-26).

Release Controls: There are no known release controls.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

S-26 UNIT NAME: Sewer Sump

Unit Description: The unit is a concrete sump and sewer monitoring flume. The sump is approximately three feet long, three feet wide, and three feet deep and is covered with a metal grate. The monitoring flume is made of plexiglass. This unit is located in the south section of the Soil Pipe facility. The facility monitors for flow rate, pH, total suspended solids, total metals, and oil and grease.

Date of Start-Up: This unit has been operating since 1976.

Date of Closure: The unit is active.

Waste Managed: This unit receives overflow from the Cooling Tower Sump (SWMU S-25). The unit discharges approximately 20,000 gallons to the Sanitary Sewer (SWMU S-27) per day.

Release Controls: There are no known release controls.

History of Releases: No evidence of release was observed during the VSI or identified in the file review.

Reference: 70

S-27 UNIT NAME: Sanitary Sewer

Unit Description:	The unit consists of pipe of varying ages, dimensions, and materials of construction located throughout the facility.
Date of Start-Up:	The unit has been operating since 1956.
Date of Closure:	The unit is active.
Waste Managed:	The unit receives all facility runoff and approximately 20000 gallons per day of overflow from the Clarifier (SWMU S-22).
Release Controls:	Releases to the POTW are permitted by the City of Chattanooga. The overflow is monitored on a biweekly basis.
History of Releases:	No evidence of release was observed during the VSI or identified in the file review.
Reference:	

S-28 UNIT NAME: Former Outfall

Unit Description:	The unit is a corrugated metal pipe approximately two feet in diameter. This unit formerly discharged to the Tennessee River under NPDES permit 0003808.
Date of Start-Up:	The unit began operations in 1956.
Date of Closure:	The unit ceased discharging in 1981.
Waste Managed:	The unit received all facility runoff and overflow from the Slag Sump (SWMU S-5) and the Number 17 Pit (SWMU S-20).
Release Controls:	There were no known release controls.
History of Releases:	Chronic violations of the NPDES Permit resulted in a Commissioner's Order to cease discharging. Effluent limits were exceeded for manganese, iron, zinc, phenols, total chromium, BOD, surfactants, suspended solids and settleable solids.
Reference:	21, 34, 36 and 70

S-A through S-F UNIT NAME: Underground Tanks

The facility submitted notification for Underground Storage Tanks on April 2, 1986. The underground tanks and associated piping are constructed of unprotected steel. The tanks are presented in the following table (Table B-7).

TABLE B-7

SOIL PIPE DIVISION UNDERGROUND STORAGE TANKS

Unit Number	Unit Name	Division/Location	Capacity	Date of Start-Up	Status	Contents	History of Release
S-A	Underground Tank No. 5009	Soil Pipe Division/ maintenance area north section of the facility.	6,000 gallons	1973	Inactive	Some diesel bottom residue	No evidence of release was noted in the file material or during the VSI.
S-B	Underground Tank No. 5583	Soil Pipe Division/ at concrete slab fitting storage area in the central section of the facility.	10,000 gallons	1961	Active	Naphtha	Black stains and odors were noted during the VSI.
S-C	Underground Gasoline Tank No. 3	Soil Pipe Division/ located at employee entrance in the southeast section of the facility.	1,500 gallons	1980	Active	Unleaded gasoline	No evidence of release was noted in the file material or during the VSI.
S-D	Underground Tank No. 4	Soil Pipe Division/ vicinity of the small pipe dipping area in the north section of the facility.	20,000 gallons	1956	Active	Asphalt/ naphtha	No evidence of release was noted in the file material or during the VSI.
S-E	Underground Tank No. 5	Soil Pipe Division/ vicinity of the offices in the north section of the facility	1,000 gallons	1956	Active	Diesel	No evidence of release was noted in the file material or during the VSI.
S-F	Underground Tank No. 6	Soil Pipe Division/ vicinity of the offices in the north section of the facility	8,127 gallons	1965	Active	Gasoline	No evidence of release was noted in the file material or during the VSI.

ATTACHMENT C

GROUND-WATER ANALYSES
FOR THE LANDFILL

(Reference 71)

SUMMARY OF WATER ANALYSES
MONITORING WELL NO. 1
(Downgradient)

Parameter/Sample Date	04/24/85	05/20/85	05/28/85	12/09/85	10/27/87	Average
pH	7.6	7.0	7.1	-	-	7.2
Temp. °C	13.9	15.1	-	-	-	14.5
Conductivity umhos/cm	2,300	2,300	-	-	-	2,300
Total Cadmium	0.001	0.004	0.002	0.001	0.009	0.003
Cyanide	-	-	-	0.01	0.01	0.01
Formaldehyde	-	-	-	0.45	0.1	0.28
Total Iron	2.4	0.19	0.21	21	15	7.8
Total Lead	0.01	0.012	0.010	0.01	0.14	0.01
Phenols	0.05	0.016	0.020	0.03	0.02	0.03
Toluene	-	-	-	-	0.0001	0.0001
Total Organic Carbon	278	180	160	220	210	210

124

MONITORING WELL NO. 2
(Upgradient)

Parameter/Sample Date	04/24/85	12/09/85	10/27/87	Average
pH	7.8	-	-	-
Temp. °C	16.2	-	-	-
Conductivity umhos/cm	670	-	-	-
Total Cadmium	0.001	0.001	0.007	0.003
Cyanide	-	0.01	0.03	0.02
Formaldehyde	-	0.05	0.1	0.08
Total Iron	4.4	29	34	22
Total Lead	0.01	0.05	0.22	0.09
Phenols	0.01	0.01	0.007	0.009
Toluene	-	-	0.0001	0.0001
Total Organic Carbon	15	10	35	20

SUMMARY OF WATER ANALYSES
SURFACE WATER DISCHARGE PIPE

Parameter/Sample Date	03/26/87	10/27/87
pH	7.2	
Total Cadmium	0.002	0.001
Cyanide	-	0.01
Formaldehyde	-	0.01
Total Iron	1.1	2.1
Total Lead	0.012	0.06
Phenols	0.002	0.007
Toluene	-	0.001
Total Organic Carbon	5	44
Total Chromium	0.003	-

S-G UNIT NAME: Naphtha/Asphalt Transfer System

Unit Description: The area is an underground storage tank and piping system. The area transfers and stores an asphalt/naphtha mixture utilized by the Soil Pipe division's coating operations. The area consists of a 20,000-gallon steel tank and approximately 200 feet of four-inch-diameter underground ductile iron piping. This system has been in operation since 1956. The tank is used to store asphalt/naphtha mixture during weekends. The tank is located in the vicinity of the small pipe coating operation in the north section of the facility. The piping connects the tank to the asphalt/naphtha mixing tank located in the vicinity of the concrete slab fittings storage in the central section of the facility. The VSI Team observed black, oily stains in the area and a recent addition of roadbase material to serve as a containment dike (Reference 70).

ATTACHMENT A

VISUAL SITE INSPECTION SUMMARY
AND PHOTOGRAPH LOG

INTRODUCTION

The Visual Site Inspection (VSI) summary discusses the activities of representatives of A.T. Kearney, Inc., and U.S. EPA Region IV during the January 23 and 24, 1989, VSI of the U.S. Pipe and Foundry facilities. Observations and information gathered during the VSI are incorporated in the main body of the report.

VISUAL SITE INSPECTION SUMMARY

The following individuals participated in part or all of the January 23 and 24, 1989, Visual Site Inspection:

Alicia Thomas	U.S. EPA Region IV
Jim Childress	Tennessee Department of Health and Environment
Jeff Evans	A.T. Kearney/Centaur Division
Phebe Davol	A.T. Kearney/Centaur Division
Wayne Berry	U.S. Pipe and Foundry/Valve and Fittings Plant
J. J. Pikciunas	U.S. Pipe and Foundry/Soil Pipe Division
Daryl Tuttle	U.S. Pipe and Foundry/Soil Pipe Division
Don Wallace	U.S. Pipe and Foundry/General Office
John Watson	U.S. Pipe and Foundry/General Office
Jim Smallwood	U.S. Pipe and Foundry/Valve and Fittings Plant
Jim Book	U.S. Pipe and Foundry/ Valve and Fittings Plant

The VSI Team arrived at the U.S. Pipe and Foundry Fittings Plant office at 9:00 a.m. on January 23, 1989. The morning temperature was 35 degrees Fahrenheit with clear skies and light winds at five miles per hour. The team met with facility representatives in a conference room located in the central section of the Fittings Plant.

Phebe Davol explained the purpose of the VSI and asked U.S. Pipe and Foundry representatives to provide information requested in the facility notification letter. The Valve and Fittings plant facility representatives had most of the information requested in an organized manner. Since the tour of the Soil Pipe plant would be conducted on the following day, the information requested of that facility would be obtained then.

The inspection began in the Fittings Plant which is located in the south section of the property. In order to understand the process and waste generation points, the tour proceeded from the receipt of scrap material through the foundry process and finally to the treatment of baghouse dust.

The tour group adjourned for lunch at 12:00 p.m. The temperature remained cool for the remainder of the day with a high of 50 degrees Fahrenheit. Following lunch, the team and facility representatives toured the Valve Plant located in the central section of the facility. The tour began with the receipt of raw materials, through the foundry operations and ending with the final coating or blasting operations. The fire hydrant assembly testing area was also observed.

During the course of the day, the facility representatives provided the total acreage of each section of the facility. The Fittings Plant occupies 39.41 acres, the Valve plant occupies 12.98 acres, the Soil Pipe plant occupies 30.11 acres, the Landfill occupies 27.95 acres and the remaining acreage is for parking. The total acreage of the site is approximately 111 acres.

The tour concluded at 5:00 p.m. to be continued the following day.

<u>January 24, 1989</u>

The VSI team arrived at the Fittings Plant conference room at 9:00 a.m. on January 24, 1989. The temperature was approximately 40 degrees Fahrenheit with clear skies and light winds. After a preliminary meeting to discuss some information gaps from the following day, the inspection team revisited the area of the Former Scrubber, and the vehicle wash rack area where water was observed beneath the manway cover of an underground storage tank. The team then proceeded to the Landfill.

The tour adjourned for lunch at 11:30 a.m. Following lunch, the team met with Soil Pipe representatives to discuss information needs outlined in the facility notification letter. The tour began with the area where scrap material is delivered by railcar to the facility. A tour of the foundry operations was followed by inspection of the wastewater treatment system located at the south end of the property boundary. The tour concluded with inspection of the pipe coating and drying areas.

The tour concluded at 3:30 p.m., and a close-out meeting was held in the Soil Pipe conference room. Ms. Alicia Thomas of EPA explained that U.S. Pipe would be allowed to review the Interim RFA report prior to its finalization. U.S. Pipe representatives agreed that any contractor questions would be directed to Mr. John Watson at the General Office in Birmingham, Alabama. He would direct the questions to the appropriate person.

The inspection team departed at 4:00 p.m.

PHOTOGRAPH LOG

The photographs presented in the following log were taken with a Canon Sure Shot using 100 ASA film. Each SWMU is identified by a number. SWMUs with more than one photograph are identified with a number followed by a decimal and another number. For example, V-1.1 and V-1.2 are photographs for SWMU V-1. AOCs are designated with a letter.

ATTACHMENT B

DESCRIPTION OF
SOLID WASTE MANAGEMENT UNITS
AND OTHER AREAS OF CONCERN

F-5.2 View of the oil drums adjacent to the Oil/Water Separator (SWMU F-5), facing south. Note the sorbent material around the drums and the base of the unit.

F-6 Southwest view of the Solidification Discharge Area (SWMU F-6). Note the material is routinely shovelled using a front-end loader into trucks for transport to the Landfill (SWMU F-27).

F-7.1 View of the Breaker Waste Pile (SWMU F-7), facing west. Note the pink material is casting sand and the remaining material is a mixture of sand and core butts.

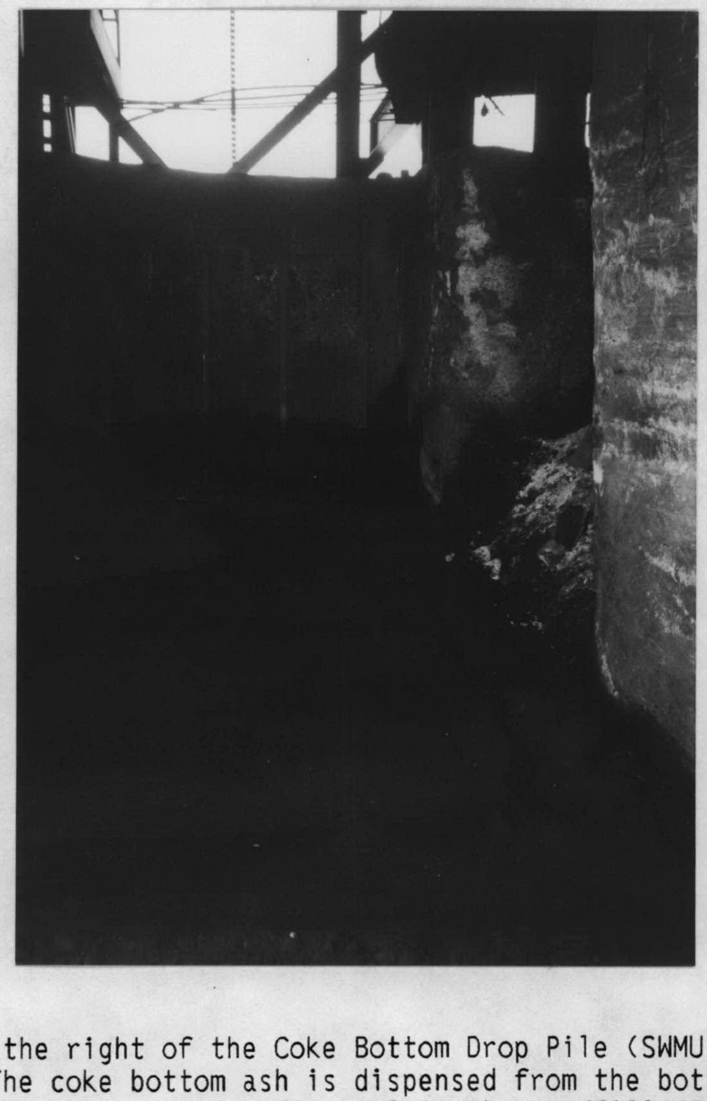
F-7.2 View to the left of the Breaker Waste Pile (SWMU F-7), facing southwest. The building to the left is where a steel ball crushes residual iron and slag.

F-7.3 Close-up view of the Breaker Waste Pile (SWMU F-7), facing west. The material consists of iron and some slag which will be recycled in the cupola furnace.

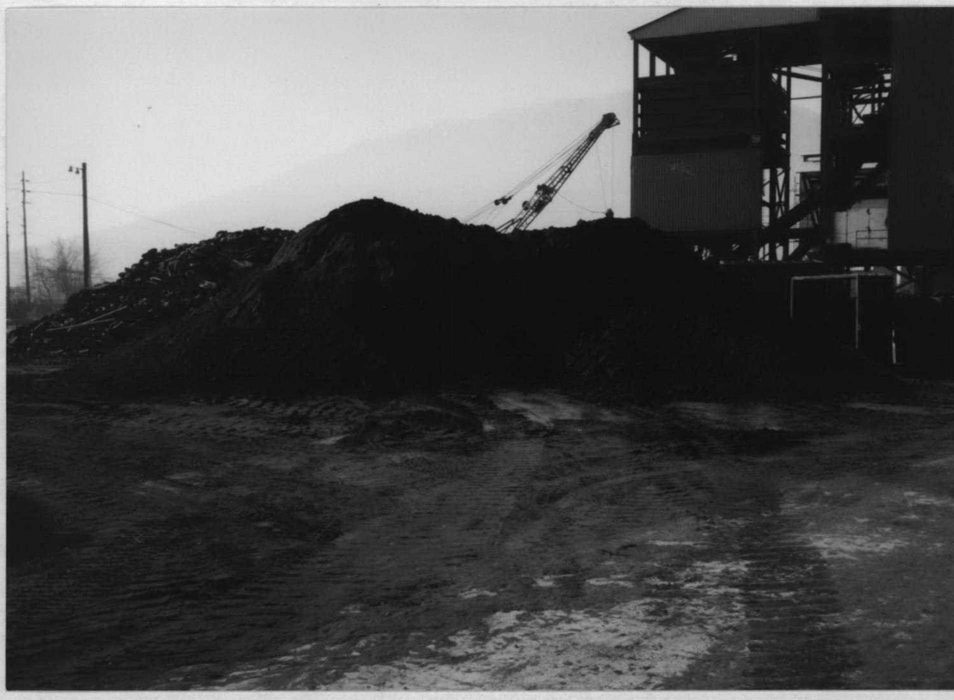
F-7.4 Overview of the clean sand overflow chute for the Breaker Waste Pile (SWMU F-7), facing west. The material is clean sand which will be disposed of in the Landfill (SWMU F-27) with the other waste material in the area.

F-8 View of the Cement Waste Pile (SWMU F-8), facing north. The waste is the material in the foreground, and the clean sand is within the concrete bin in the background. The material is staged on bare soil.

F-9.1 Inside view of the Coke Bottom Drop Pile (SWMU F-9), facing west. Note the material is on a concrete surface and surrounded by concrete walls.



F-9.2 View to the right of the Coke Bottom Drop Pile (SWMU F-9), facing west. The coke bottom ash is dispensed from the bottom of the cupola furnace to this area for disposal in the Landfill (SWMU F-27).



F-10 View of the Excess System Sand Pile (SWMU F-10), facing west. The sand will either be returned to the process or disposed of in the Landfill (SWMU F-27). The material is on bare soil.

F-11 View of the Green Sand and Core Butt Discharge (SWMU F-11), facing north. This material is located on bare soil and will be disposed of in the Landfill (SWMU F-27).

F-12 View of the Shot-Blast Accumulation Area (SWMU F-12), facing northeast. The screened material will be disposed of in the Landfill (SWMU F-27).

F-13 View of the Slag Accumulation Area (SWMU F-13), facing west. The steam emanating from the area is normal and results from the addition of water to the molten slag.

F-14.1 Overview of the Staging Area (SWMU F-14), facing north. The material consists of sand and waste coke and is positioned on concrete. Note the area drainage appears to flow toward the foreground of the photograph.

F-14.2 Close-up view of the Staging Area (SWMU F-14), facing northeast. Note the liquid drains southward towards the photographer, away from the area.

F-15.1 View of the Empty Drum Storage Area (SWMU F-15), facing southeast. Note the horizontal drums formerly contained 1,1,1-trichloroethane and are located on bare soil.

F-15.2 View of the Empty Drum Storage Area (SWMU F-15), facing west. The drums are in poor condition, formerly contained water-based coolant and are located on bare soil.

F-15.3 View of the area in the vicinity of the Empty Drum Storage Area (SWMU F-15), facing west. The soil and gravel were stained and appeared to receive runoff from the Empty Drum Storage Area (SWMU F-15).

F-16 Inside view of the Dip Tank Hoods (SWMU F-16), facing west. The dip tank is located beneath the hood.

F-17 View of a representative grate for the Storm Sewer (SWMU F-17), facing west. Note the unit receives stormwater runoff from the driveways and parking areas.

F-18 Overview of the driveway on the west side of the Fittings Plant, facing south. The manhole cover for the Sanitary Sewer (SWMU F-18) is located in the center of the photograph (indicated by an arrow).

F-19 View of a representative Roll-off Box (SWMU F-19), facing northeast. Note the container is elevated above the ground.

F-20.1 View of the Cupola Baghouse Silo (SWMU F-20), facing northwest. Note the unit is new and appears in good condition.

F-20.2 View of the vacuum truck discharge pipe for the baghouse dust from the Soil Pipe Cupola Baghouse (SWMU S-11) to be treated in the Cupola Baghouse Silo (SWMU F-20), facing north. Hoses from trucks are connected to the pipe; dust is discharged to the silo for treatment.

F-21 View of the Cupola Baghouse (SWMU F-21) system, facing west. Note the system is new and appears in good condition.

F-22 Inside view of the Ductile Iron Baghouse (SWMU F-22), facing southwest. Note the area is enclosed and underlain by concrete beneath the chutes.

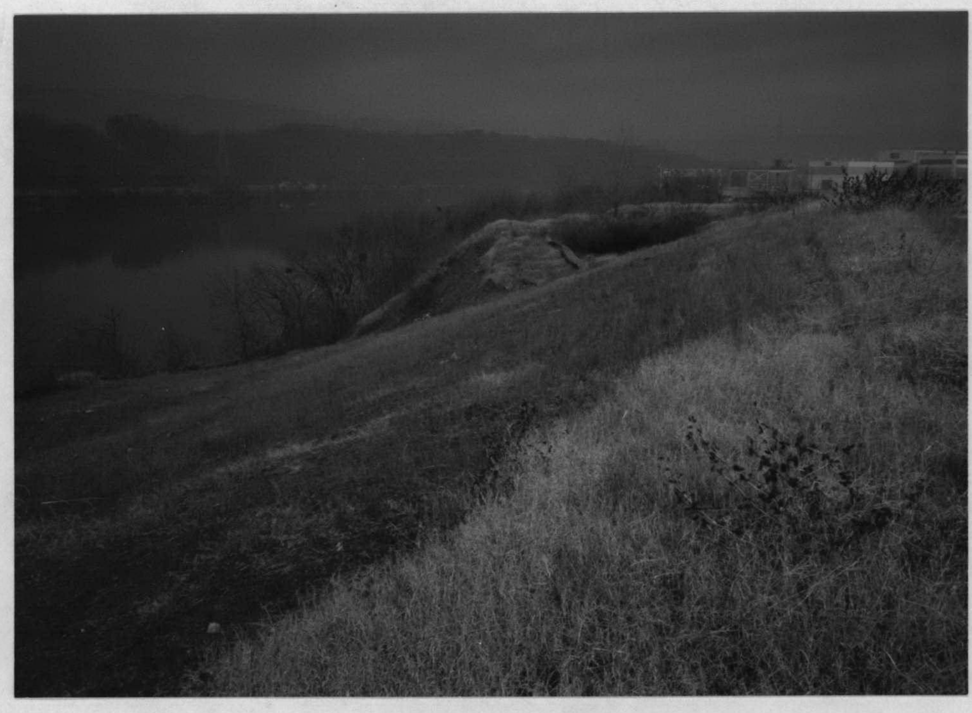
F-23 View of the location for the Former Scrubber (SWMU F-23), facing north. The scrubber was positioned on the concrete pad in the center of the photograph.

F-24 View of the Griffin Baghouse (SWMU F-24), facing west. Note the unit is underlain by concrete and appears in good condition.

F-25 View of the Number 9 Cyclone (SWMU 25), facing east. Note moisture and some sand is emanating from the stack.

F-26 View of the Pangborn Baghouse (SWMU 26), facing west. Note the unit is underlain by concrete and appears in good condition.

F-27.1 View of the Landfill's (SWMU 27) active face, facing west. The Tennessee River is on the back side of the landfill.

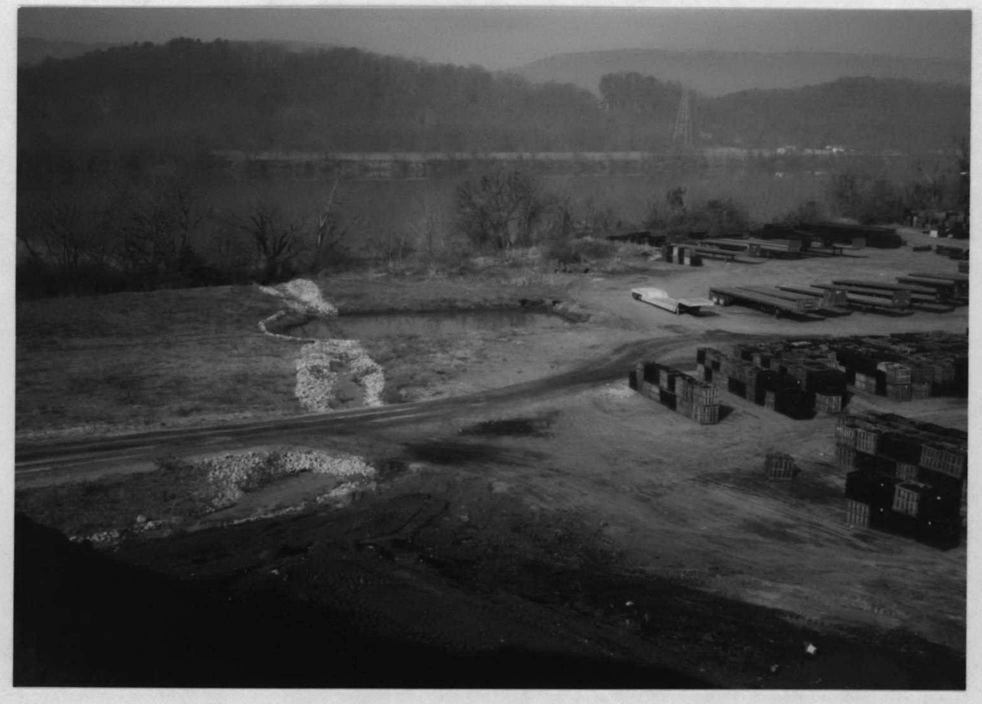


F-27.2 View of the Tennessee River from the top of the north side of the Landfill (SWMU 27), facing northwest. Note the vegetative cover appears adequate.

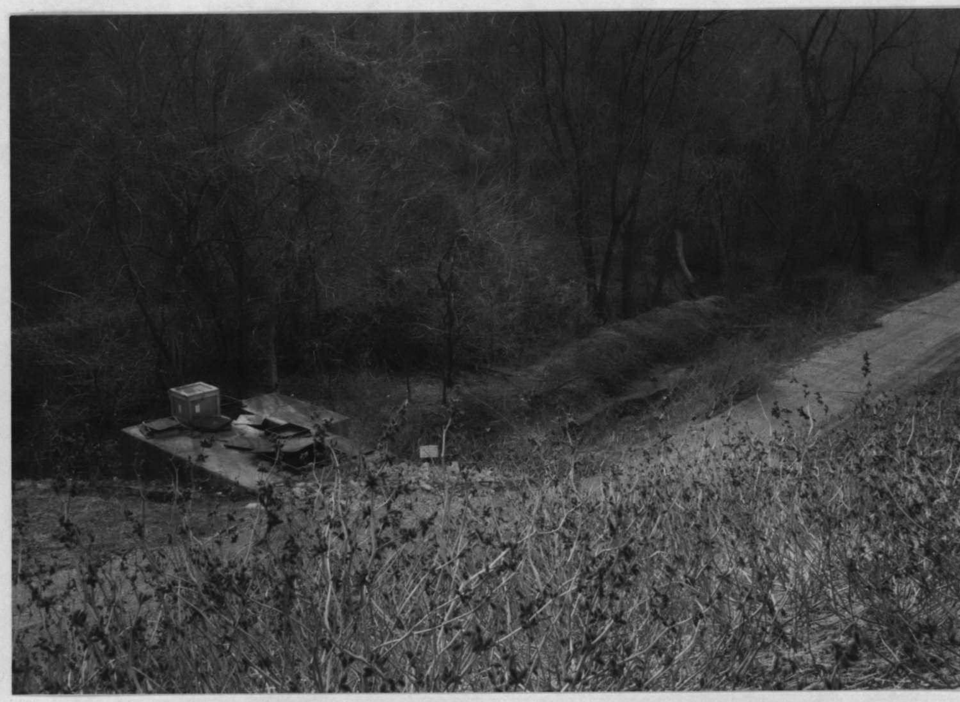
F-27.3 Recently graded material on the Landfill (SWMU F-27), facing north. Note the current active face is on the north side of the Landfill.

F-27.4 View of the vegetated slope on the northeast side of the Landfill (SWMU F-27), facing northeast. One of the monitoring wells is visible in the center of the photograph.

F-27.5 View of the active face of the Landfill (SWMU F-27), facing northwest. Note the pink material is disposed foundry sand.



F-28 Overview of the Runoff Pond (SWMU 28), facing west towards the Tennessee River. Photograph was taken from on top of the Landfill (SWMU 27). Note runoff from the Landfill (SWMU 27) is collected in the pond and recharges or overflows into the river.



F-29 Overview of the Landfill Discharge Ditch/Pipe (SWMU F-29), facing southeast. Note the photograph was taken from the top of the east side of the Landfill (SWMU 27).

F-A View of the Hydraulic Oil Storage Area (AOC F-A), facing southeast. Note the sorbent on the asphalt surrounding the drum rack.

F-B View of the area over Cupola Fuel Oil Underground Tank No. 1 (AOC F-B) and Cupola Fuel Oil Underground Tank No. 2 (AOC F-C), facing southeast. Note the liquid surrounding the area is from recent rainfall.

F-C A photograph was not taken since the location of the Cupola Fuel Oil Underground Tank No. 2 (AOC F-C) is depicted in the previous photograph.

F-D View of the location for former Fuel Underground Tank No. 3 (AOC F-D), facing west. Note the tank is no longer in use.

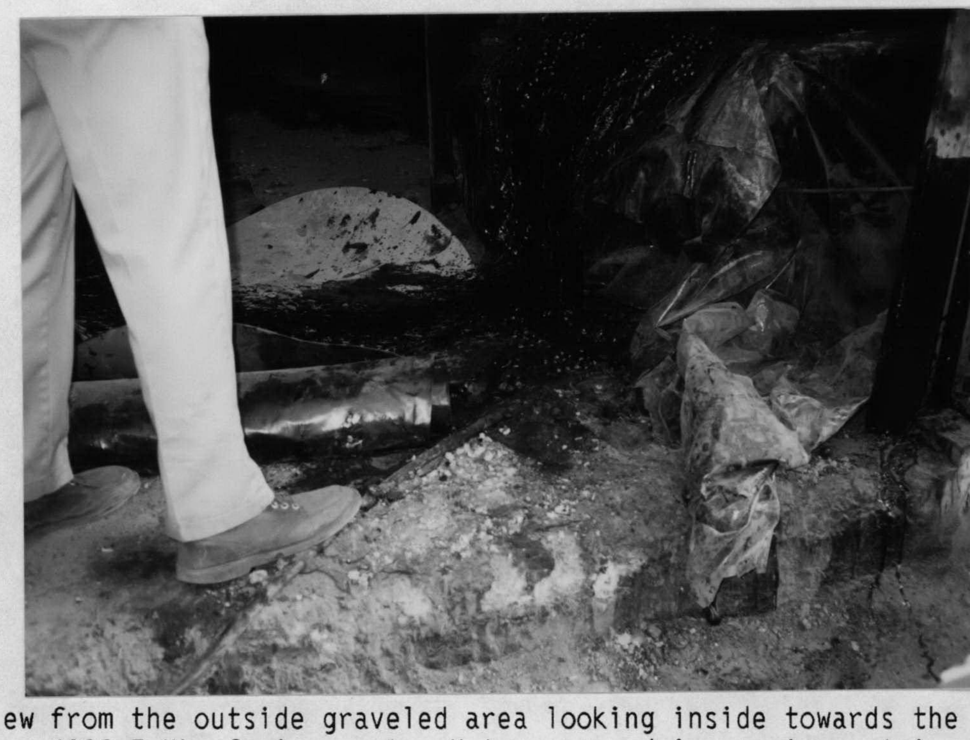
F-E.1 View of the location for Underground Tank No. 4 (AOC F-E), facing east. Note the concrete is stained around the fill pipe.

F-E.2 View beneath the manway for access to Underground Tank No. 4 (AOC F-E), facing east. Note the hole is filled with liquid of an unknown source.

F-F View of the location for Underground Tanks Nos. 5 and 6 (AOC F-F and AOC F-G), facing northeast. Note the minor staining is probably from leaking transmission housings or oil pans.

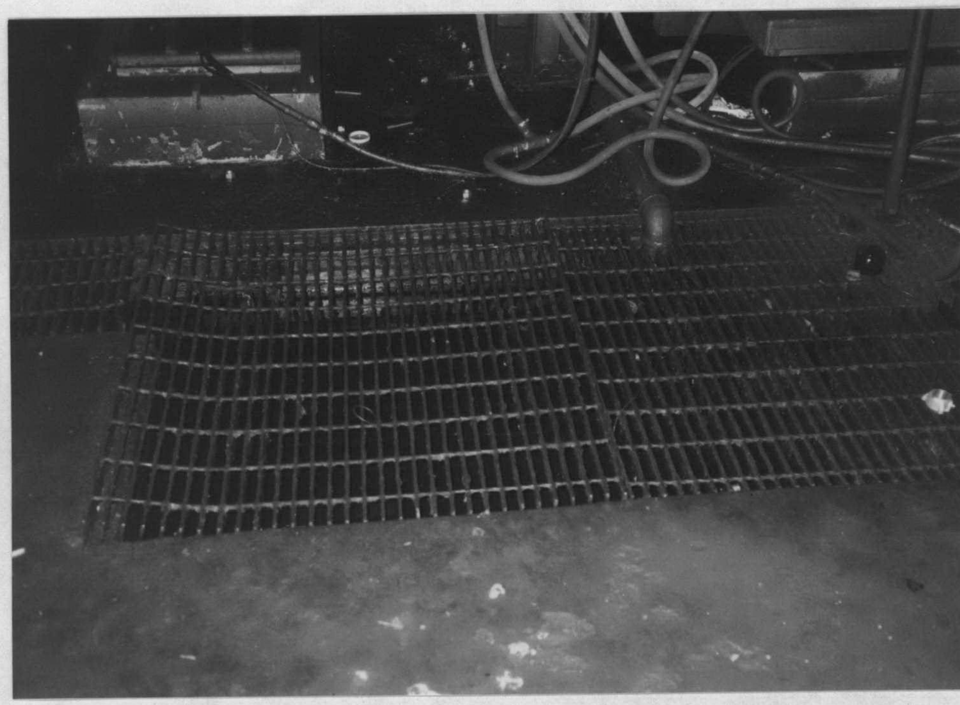
F-G No photograph was taken since Underground Tank No. 6 (AOC F-G) is depicted in the previous photograph.

F-H.1 Outside view of the Coating Area (AOC F-H), facing north. Note the asphalt coating mixture is pumped from the truck to the tank inside the building via the hoses in the middle of the photograph.

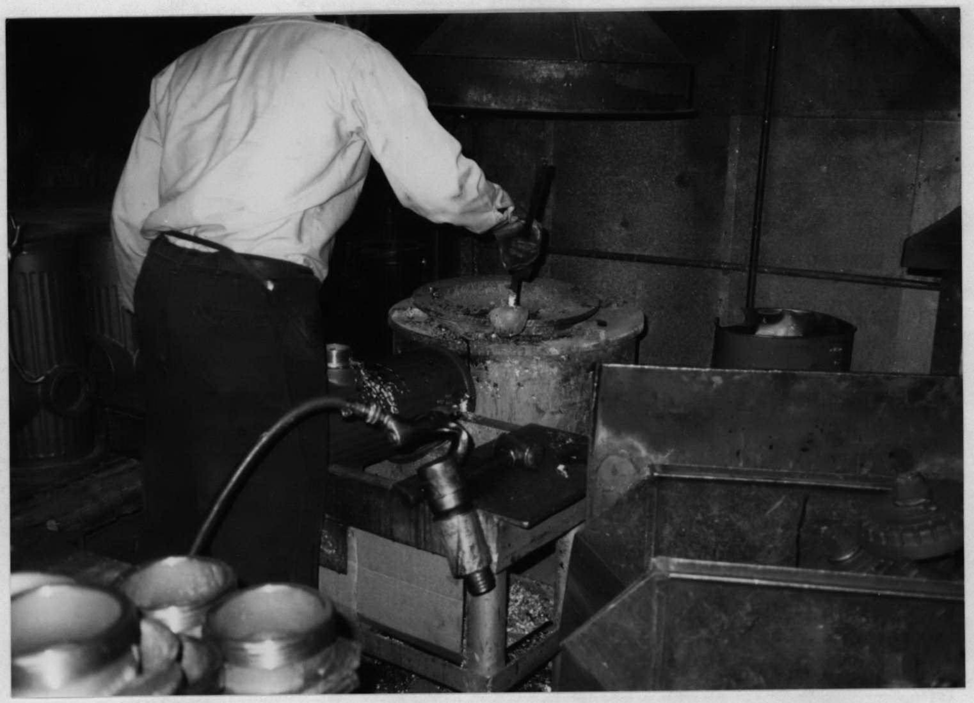


F-H.2 View from the outside graveled area looking inside towards the Coating Area (AOC F-H), facing east. Note excess drippage is contained on the plastic; however, some drippage was observed flowing onto the soil outside the building.

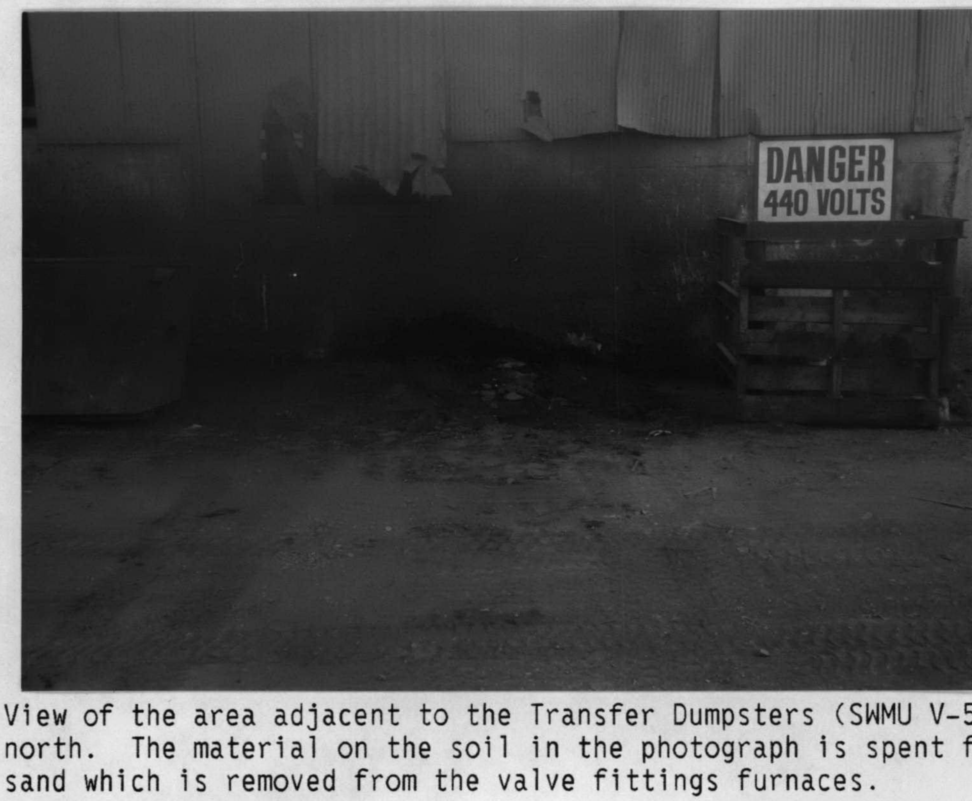
V-1 View of the Cabinet Cleaning Area Drain (SWMU V-1), facing south. Note the oily stains surrounding the grate.



V-2.1 View of the Hydrant Testing Sump (SWMU V-2), facing east. Note the sump extends to the left beyond the area depicted in the photograph.



V-4 Overview of the Lead Melting Pot Area (SWMU V-4), facing north. Note the exhaust hood in the middle top portion of the photograph exhausts fumes from lead melting to the atmosphere.



V-5.1 View of the area adjacent to the Transfer Dumpsters (SWMU V-5), facing north. The material on the soil in the photograph is spent foundry sand which is removed from the valve fittings furnaces.

V-2.2 View of the Hydrant Testing Sump (SWMU V-2), facing west. Note the liquid in the foreground is water from the hydrant testing operation.

V-3 View of the Lead Dross Drum Area (SWMU V-3), facing southeast. Note the drums to the left contain brass shavings and the bin in the middle contains the lead dross.

V-5.2 View of the Transfer Dumpsters (SWMU V-5), facing northwest. The spent foundry sand is disposed of in the units following molding operations.

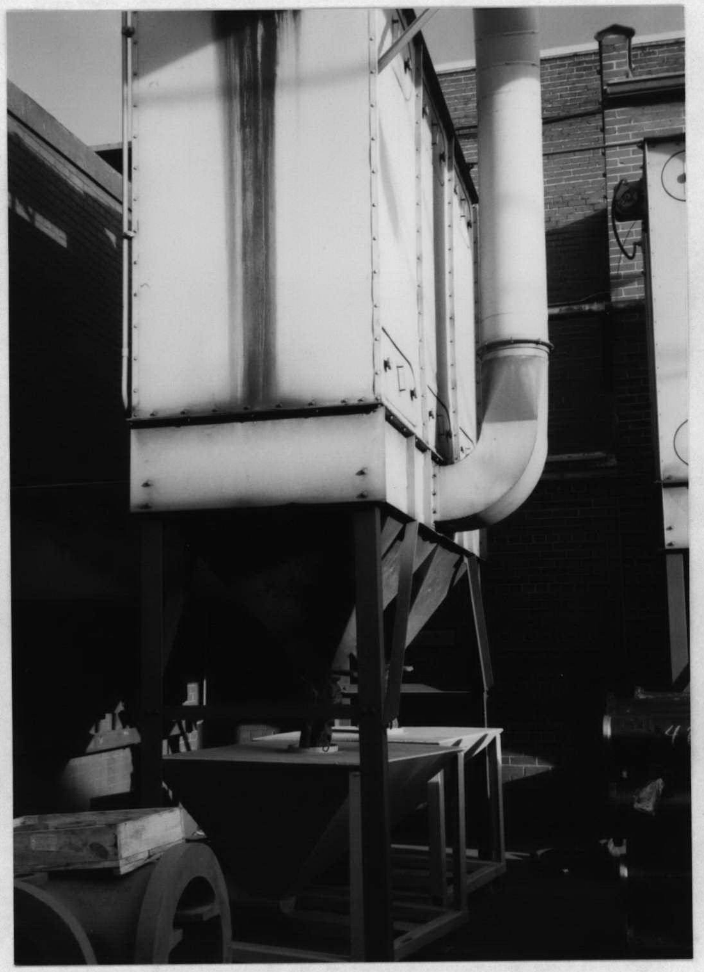
V-6.1 View of the water curtain for a representative Paint Booth (SWMU V-6), facing north. Note the drum to the left contains the paint sludge from the water curtain.

V-6.2 View of the water curtain for a representative Paint Booth (SWMU V-6), facing east. Note the unit is inside a building and appeared in good condition.

V-7.1 View of the Brass Foundry Baghouse (SWMU V-7), facing northeast. Note the baghouse dust on the concrete beneath the unit.

V-7.2 Close-up view of the Brass Foundry Baghouse (SWMU V-7), facing northeast. Note the dust around the base of the chute.

V-8 No photograph was taken of the Brass Grinding Baghouse (SWMU V-8); however, a section of the unit can be seen in the photograph for the Brass Shot-Blast Baghouse (SWMU V-9).



V-9 View of the Brass Shot-Blast Baghouse (SWMU V-9), facing east. Note the Brass Grinding Baghouse (SWMU V-8) is to the extreme right of the photograph.

V-10 View of the Cabinet Cleaning Baghouse (SWMU V-10), facing southeast. Note the unit is elevated above the ground and the integrity appears adequate.

V-11 Overview of the Shell Mold Baghouse (SWMU V-11), facing north. Note this unit is elevated above the ground and the collection drum is positioned on a wooden pallet.

V-A View of the location for Underground Storage Tank No. 8 (AOC V-A), facing northwest. Note the gravel is stained in the vicinity of the fueling area.

V-B.1 This photograph depicts the conditions in the vicinity of the Compressor Area (AOC V-B), facing west. Note the staining on the asphalt.

V-B.2 View of the staining observed on the bricks and the asphalt in the vicinity of the Compressor Area (AOC V-B), facing south. Note the sorbent material on the asphalt.

V-B.3 View of the stained asphalt in the vicinity of the Compressor Area (AOC V-B), facing west. Note runoff would flow downgradient from this area.

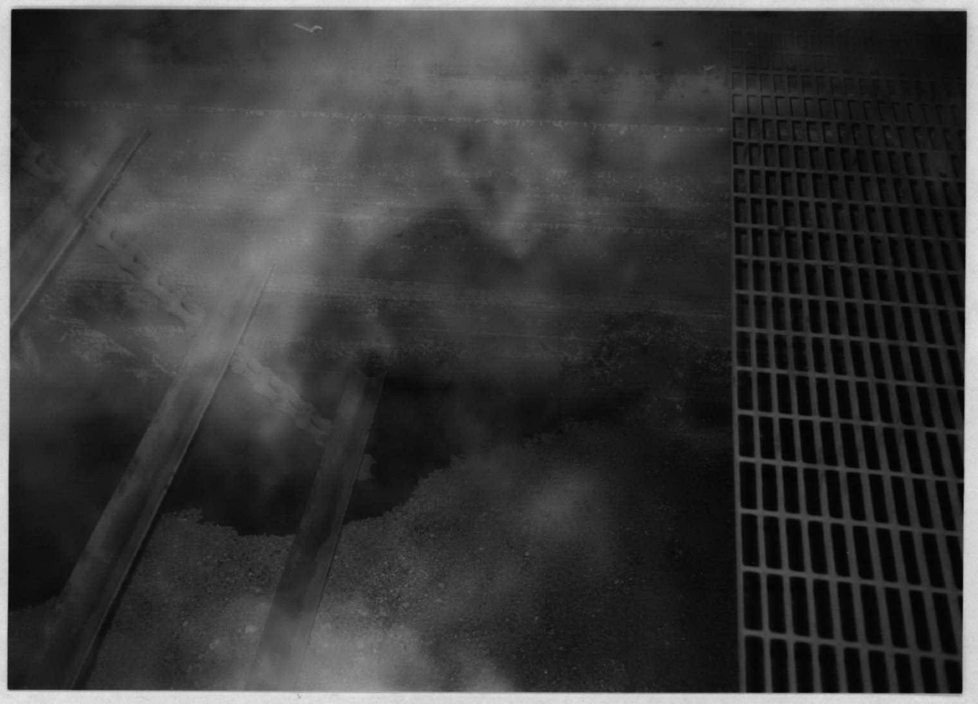
S-1.1 View of the Scrap Metal Pile (SWMU S-1), facing west. Note the material consists of vehicle exhaust systems and scrap pipe.

S-1.2 View of the Scrap Metal Pile (SWMU S-1), facing northwest. Note scrap consists of engine blocks and other engine parts. The scrap is on bare ground.

S-2 View of the Soil Pipe Roll-off Box (SWMU S-2), facing northeast. Note the material to the left is slag, spent foundry sand, and core butts in the Soil Pipe Staging Area (SWMU S-19) to be disposed of in the Landfill (F-27).

S-3 Close-up of the Special Waste Truck (SWMU S-3), facing northeast. Note the truck is new and appears in good condition.

S-4 View of the Shop Sump (SWMU S-4), facing east. Note the oil stains on the concrete and curbing. The concrete is cracked in some places.



S-5.1 Close-up of the Slag Sump (SWMU S-5), facing north. The steam emanating from the sump is from the addition of water to the molten slag. Note the concrete wall is cracked (indicated by an arrow).

S-5.2 View of the Slag Sump (SWMU S-5), facing southwest. Note the concrete is corroded in places.

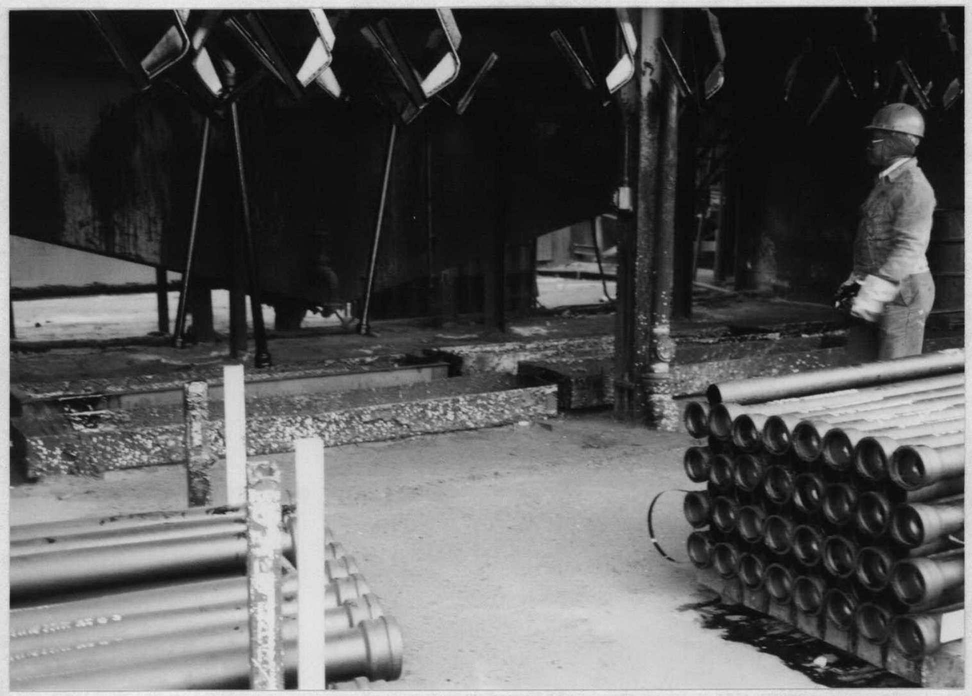
S-6 Overview of the Waste Oil Area (SWMU S-6), facing east. Note the drums are elevated above the asphalt by wooden pallets; however, there are stains in the area.

S-7.1 Overview of the Large-Diameter Pipe Drying Areas (SWMU S-7), facing southwest. Note the drippage along support wall to the right of the photograph.

S-7.2 Close-up view of the drip pans for the Large-Diameter Pipe Drying Areas (SWMU S-7), facing west. Note the asphalt coating drips into the pans; however, some drippage was observed on the soil.

S-8 Overview of the Small-Diameter Pipe Drying Areas (SWMU S-8), facing southeast.

S-9.1 View of the Paint Dip Traps (SWMU S-9), facing northeast. Note the drippage is collected in pans.



S-9.2 Overview of the Paint Dip Traps (SWMU S-9), facing southeast. Note the drippage is collected in the pans beneath the coated pipes.

S-10 View of the Naphtha/Asphalt Sump (SWMU S-10), facing northwest. Note the sump collects overflow and spillage from solvent and coating transfer.

S-11 View of the Soil Pipe Cupola Baghouse (SWMU S-11), facing east. Note the baghouse units are elevated above the ground and appear to be in good condition.

S-12.1 Close-up view of the DCE Vokes Baghouse (SWMU S-12), facing east. Note the pans beneath the chutes collect the dust. The containers are elevated above concrete.

S-12.2 Overview of the chutes for the DCE Vokes Baghouse (SWMU S-12), facing south. Note the chutes and containers are self-contained and elevated above concrete.

S-13.1 View of the Soil Pipe Griffin Baghouse (SWMU S-13), facing southeast. Note the unit appears to be in good condition.

S-13.2 Close-up view of the hopper for the Soil Pipe Griffin Baghouse (SWMU S-13), facing southeast. Note the hopper and chute are self-contained and elevated above the ground.

S-14 Overview of the Sly 79 Baghouse (SWMU S-13), facing south. Note the chutes feed into socks which are clipped to prevent dust from discharging before the hopper is positioned beneath the unit.

S-15.1 Close-up view of the Zurn Baghouse (SWMU S-15) facing northeast. Note the sock beneath the chute dispenses the dust to a hopper.

S-15.2 Close-up of the Zurn Baghouse (SWMU S-15) hopper, facing southeast. Note the chute sock empties into the hopper. There appears to be some dust around the hopper. Note the proximity of the unit to the outside.

S-15.3 View of the dust in the area for the Zurn Baghouse (SWMU S-15) hopper, facing east. Note the dust in the area is approximately two inches deep.

S-16 No photograph was available for the Coke Bottom Drop Pile (SWMU S-16). The unit is very similar to the Coke Bottom Drop Pile (SWMU F-9) in the Fittings Plant.

S-17 Close-up view of the Slag Accumulation Area (SWMU S-17), facing northwest. Note the pile is located outside for easy access by front-end loaders for removal to the Landfill (SWMU F-27).

S-18 Overview of the Slag Pile (SWMU S-18), facing north. Note the slag (in the center of the photograph) is discharged with water to this area for removal to the Slag Accumulation Area (SWMU S-17) to the left foreground.

S-19 View of the Soil Pipe Staging Area (SWMU S-19) facing north. Note the material is spent foundry sand and core butts.

S-20.1 View of the Number 17 Pit (SWMU 20), facing north. Note the sump is receiving overflow from the Number 17 cooling station.

S-20.2 Overview of the Number 17 Pit (SWMU 20), facing north. Note the unit appears to be in good condition.

S-21 View of the discharge point for the Wastewater Pipes (SWMU S-21) to the Clarifier (SWMU S-22), facing east. Note this pipe is above-ground in this picture but is predominately below ground throughout the rest of the plant.

S-22 View of the Clarifier (SWMU S-22), facing southeast. Note the concrete facing is cracked and appears to be leaking in several areas.

S-23.1 Overview of the Sludge Drying Beds (SWMU S-23), facing southwest. The photograph was taken from the top of the Landfill (SWMU F-27). The unit is in the middle of the photograph. The Soil Pipe plant is in the background.

S-23.2 Close-up of the Sludge Drying Beds (SWMU S-23), facing west. Note the effluent pipe in the middle of the photograph is discharging clarified wastewater.

S-24 View of the Cooling Tower (SWMU S-24), facing south. Note the unit is within the Cooling Tower Sump (SWMU S-25) and appears to be in good condition.

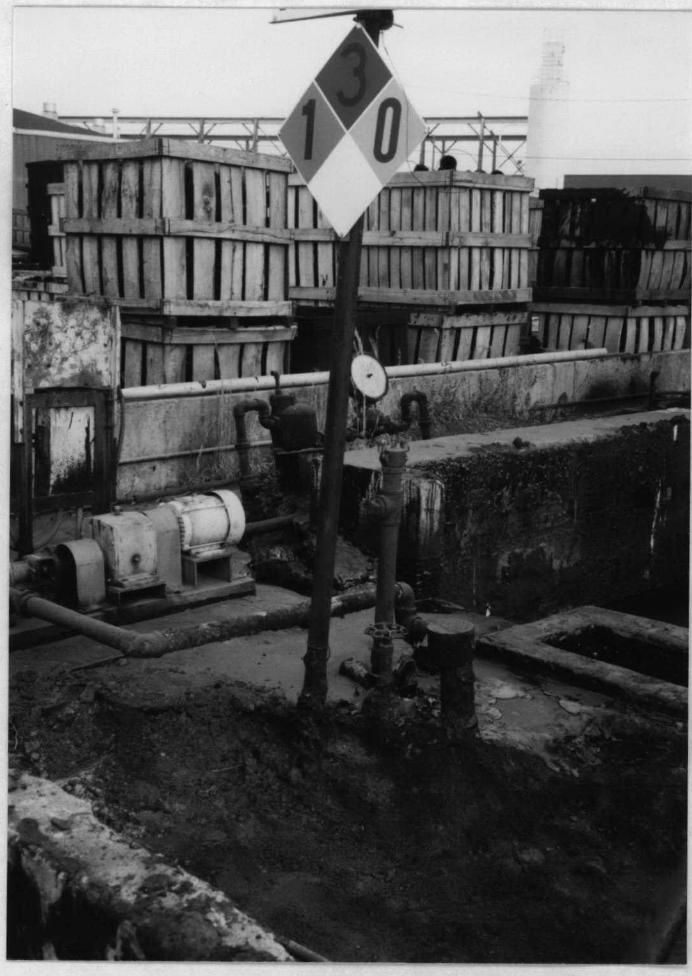
S-25 Close-up view of the Cooling Tower Sump (SWMU S-25), facing south. Note the concrete appears to be in good condition on the exterior.

S-26 View of the Sewer Sump (SWMU S-26), facing west. Note the unit is covered with a steel grate and the concrete appears to be in good condition.

S-27 View of the grate for the Sanitary Sewer (SWMU S-27) drain, facing north. Note the material around the drain is spent foundry sand and slag.

S-28 View of the Former Outfall (SWMU S-28), facing northwest. Note the pipe in the center of the photograph discharges to the Tennessee River.

S-A No photograph was available for Underground Tank No. 5009 (AOC S-A), since this unit was identified after the VSI.



S-B View of Underground Tank No. 5583 (AOC S-B) facing northeast. Note the area around the tank is stained and oily.

S-C View of the Location for Underground Tank No. 3 (AOC S-C), facing north. Note the fill pipe is adjacent to the bumper guards in the foreground.

S-D View of the location for Underground Tank No. 4 (AOC S-D), facing north. Note the steel cover is the manway access for the unit.

S-E View of the pump for Underground Tank No. 5 (AOC S-E), facing northeast. Note the concrete is stained and cracked in the area of the pump.

S-F View of the former location for the pump for Underground Tank No. 6 (AOC S-F), facing southeast.

S-G View of the Naphtha/Asphalt Transfer System (AOC S-G), facing northeast. Note the stains and recent addition of roadbase material to serve as a containment dike.

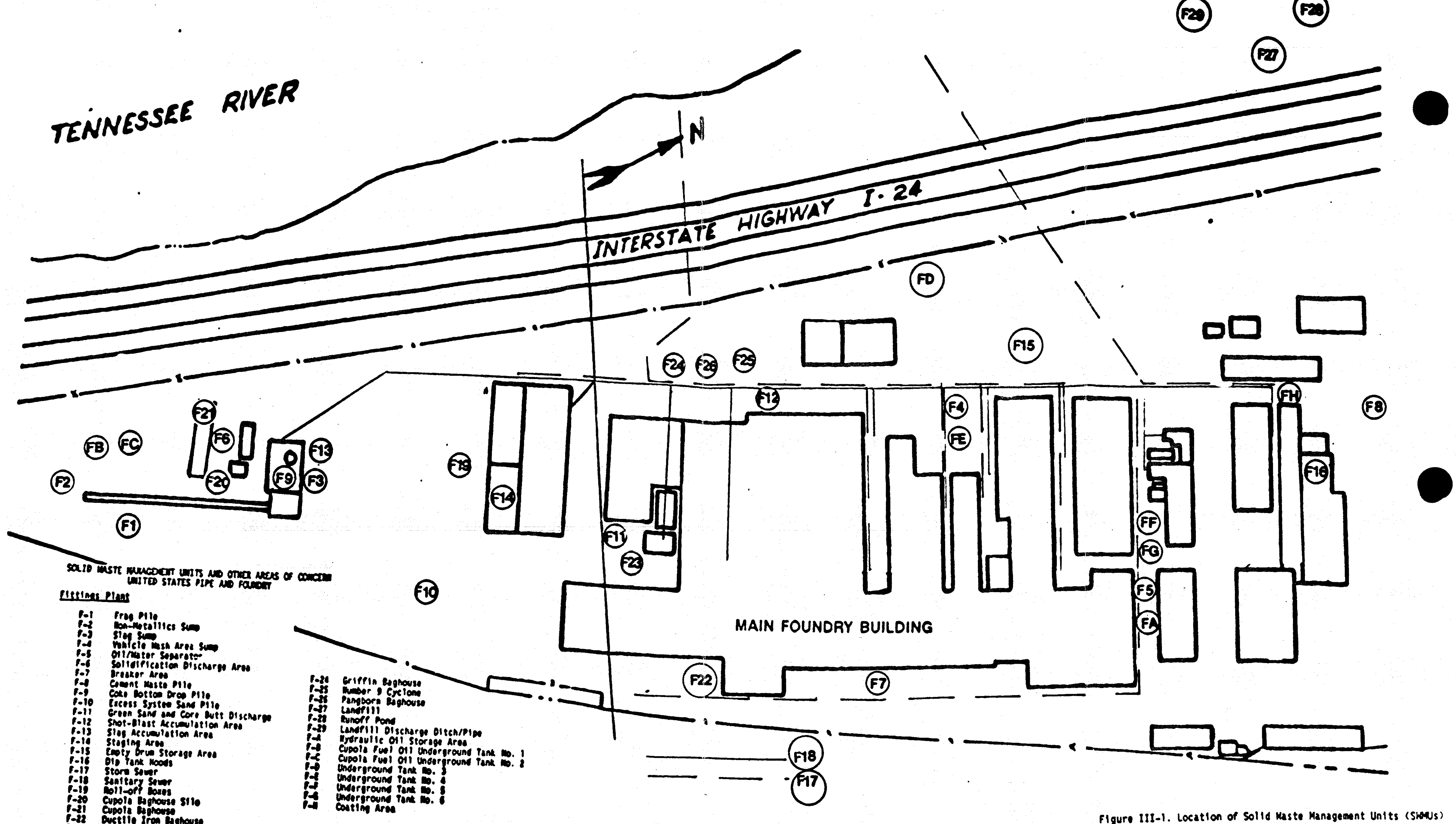
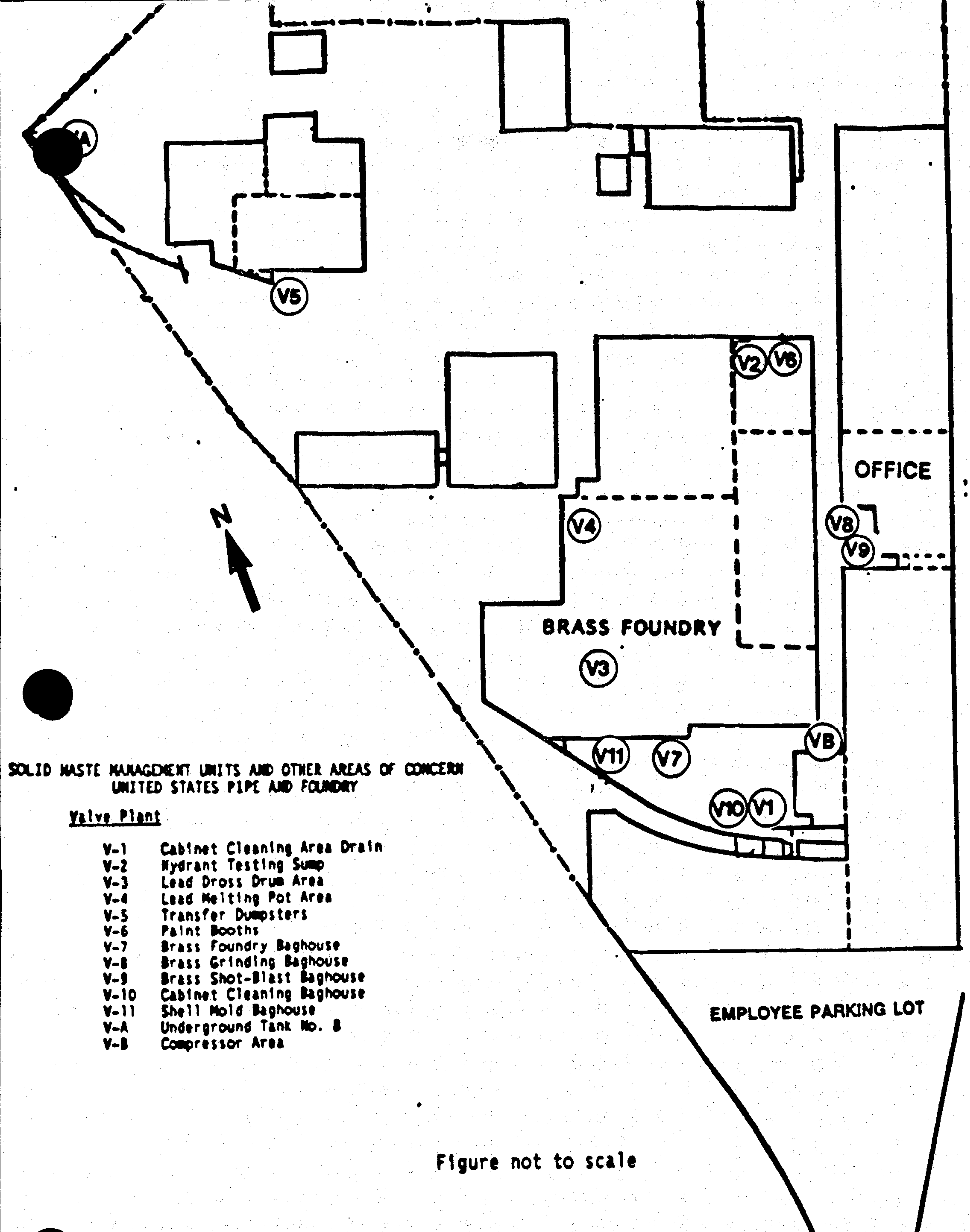
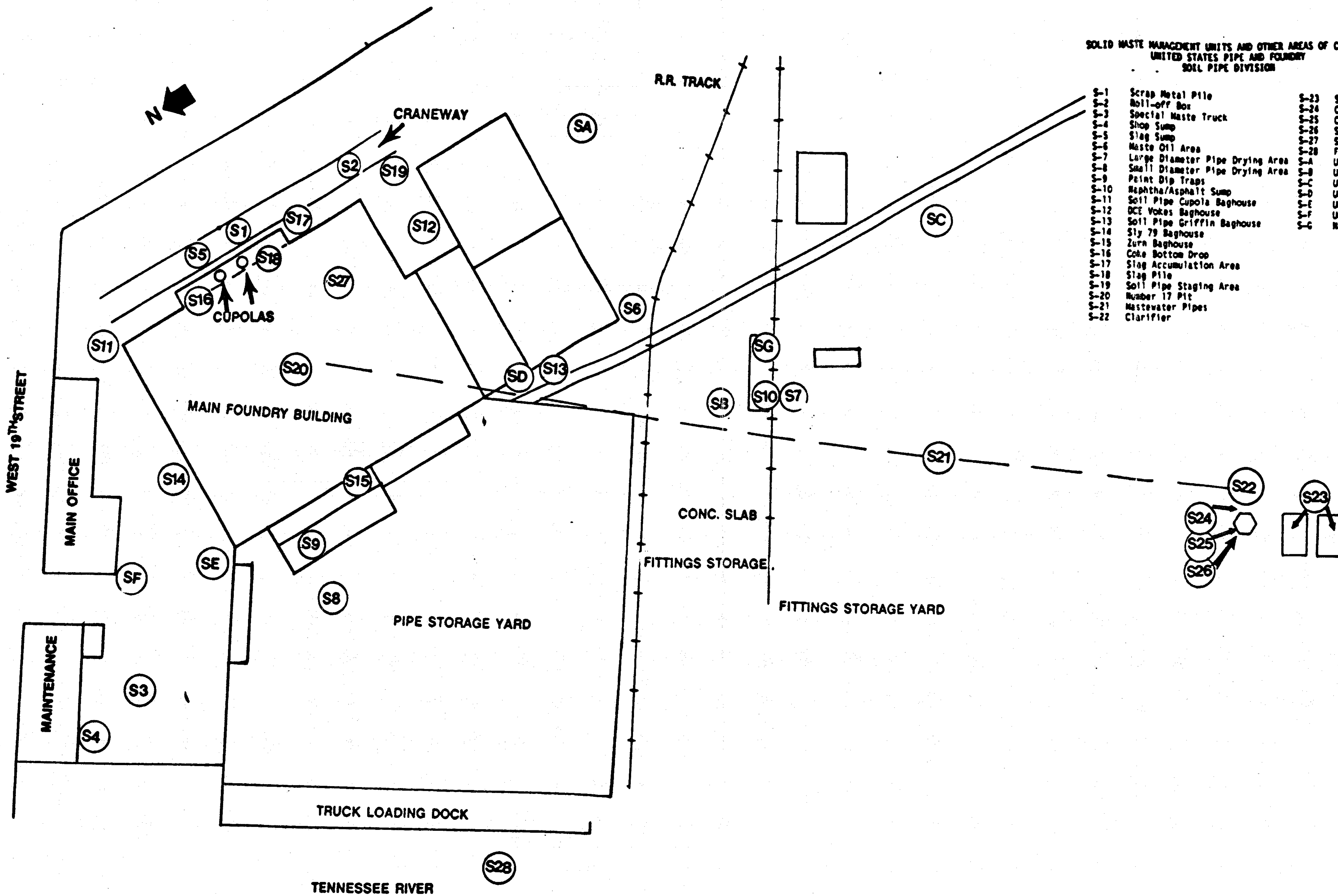


Figure III-1. Location of Solid Waste Management Units (SWMUs) and Other Areas of Concern (AOCs) at the Fittings Plant (Reference 70).

Figure not to scale



ur -2. Location of Solid Waste Management Units (SWMUs) and Other Areas of Concern (AOCs) at the Valve Plant (Reference 70).



SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN
UNITED STATES PIPE AND FOUNDRY
SOIL PIPE DIVISION

S-1	Scrap Metal Pile	S-23	Sludge Drying Beds
S-2	Roll-off Box	S-24	Cooling Tower
S-3	Special Waste Truck	S-25	Cooling Tower Sump
S-4	Shop Sump	S-26	Sewer Sump
S-5	Slag Sump	S-27	Sanitary Sewer
S-6	Waste Oil Area	S-28	Former Outfall
S-7	Large Diameter Pipe Drying Area	S-A	Underground Tank No. 5009
S-8	Small Diameter Pipe Drying Area	S-B	Underground Tank No. 5583
S-9	Paint Dip Traps	S-C	Underground Tank No. 3
S-10	Naphtha/Asphalt Sump	S-D	Underground Tank No. 4
S-11	Soil Pipe Cupola Baghouse	S-E	Underground Tank No. 5
S-12	DCE Vokes Baghouse	S-F	Underground Tank No. 6
S-13	Soil Pipe Griffin Baghouse	S-G	Naphtha/Asphalt Transfer System
S-14	Sly 79 Baghouse		
S-15	Zurn Baghouse		
S-16	Coke Bottom Drop		
S-17	Slag Accumulation Area		
S-18	Slag Pile		
S-19	Soil Pipe Staging Area		
S-20	Number 17 Pit		
S-21	Wastewater Pipes		
S-22	Clarifier		

Figure III-3. Location of Solid Waste Management Units (SWMUs) and Othe[r Areas] of Concern (AOCs) at the Soil Pipe Division (Reference 70)

Figure not to scale

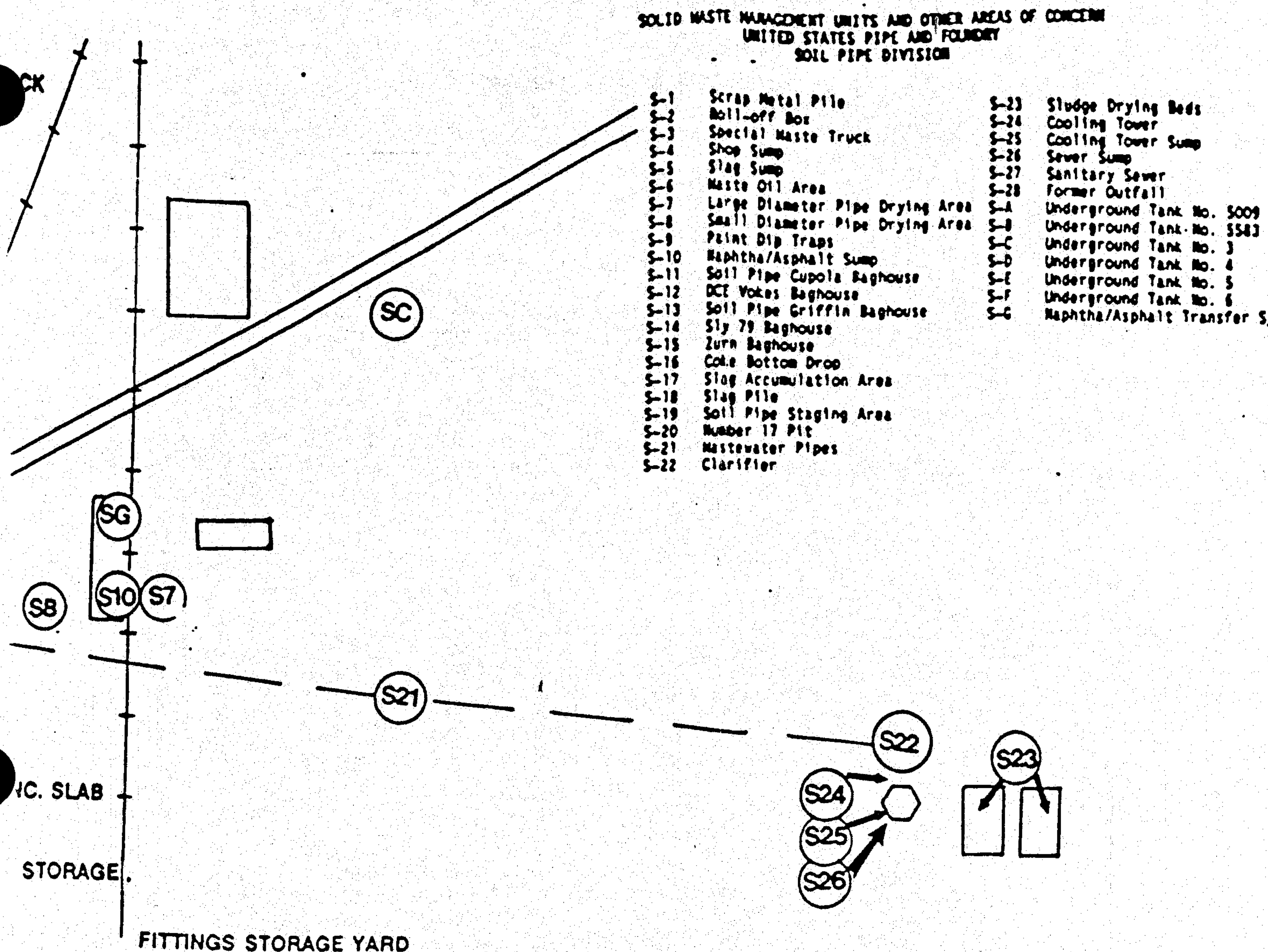
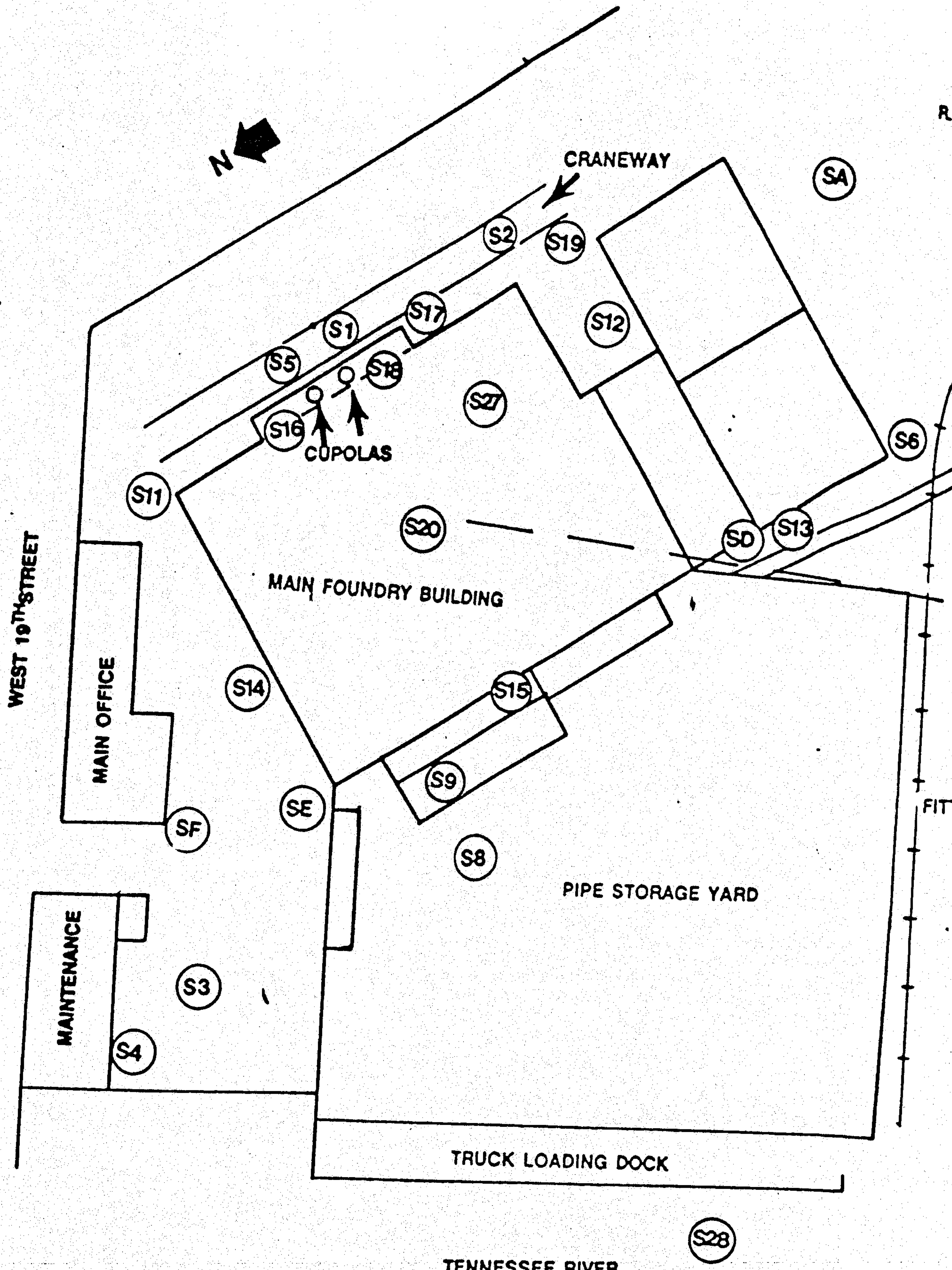


Figure III-3. Location of Solid Waste Management Units (SWMUs) and O
of Concern (AOCs) at the Soil Pipe Division (Reference

Figure not to scale


N
CRANEWAY
SA
S2
S19
S1
S17
S12
S5
S18
S27
S16
CUPOLAS
S6
S11
S20
SD
S13
WEST 19TH STREET
MAIN FOUNDRY BUILDING
MAIN OFFICE
S14
S15
S9
SE
SF
S8
PIPE STORAGE YARD
MAINTENANCE
S3
S4
TRUCK LOADING DOCK
S28
TENNESSEE RIVER

Valve Plant

Three SWMUs with low or no potential for release were identified at the Valve Plant. Two units are located indoors on concrete flooring that appeared in good condition. These units are the Lead Dross Drum Area (SWMU V-3) and the Paint Booths (SWMU V-6). The Transfer Dumpsters (SWMU V-5) are utilized by the facility to transfer waste system sand to the Fittings Plant Staging Area (SWMU F-14). The integrity of the dumpsters appeared adequate. SWMUs observed at the Valve Plant are presented in Table III-2 and are identified with the prefix V-.

Soil Pipe Division

Four SWMUs with low or no potential for release were identified at the Soil Pipe Division. One of the units is the Coke Bottom Drop Pile (SWMU S-16), which is covered by a roof and underlain by concrete. Nonhazardous materials for off-site disposal are disposed of in the Soil Pipe Roll-off Box (SWMU S-2) which is positioned above ground. The Soil Pipe Division recently acquired a Special Waste Truck (SWMU S-3). This unit is a self-contained pneumatic unit that appeared in good condition. The Cooling Tower (SWMU S-24) was deemed to have a low or no potential for release since wastewater passes through this unit and discharges to a sump. The Cooling Tower Sump appears in Table III-3 SWMUs and AOCs with a Potential for Release. SWMUs observed at the Soil Pipe Division are presented in Table III-3 and are identified with the prefix S-.

DESCRIPTION OF UNITS OR AREAS WITH POTENTIAL FOR RELEASE

SWMUs and AOCs with a potential for release to one or more media are presented in Tables III-4 through III-6.

TABLE III-1

SWMUs AND AOCs WITH LOW OR NO POTENTIAL FOR RELEASE

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Release Controls
F-9	Coke Bottom Drop Pile	Ash, unburned coke and sand from cupola furnace	1977 to present	Underlain by concrete of undetermined thick ness; contained by three concrete walls
F-11	Green Sand and Core Butt Discharge	Waste sand and core butt fragment pile	Mid 1960s to present	Underlain by concrete of undetermined thickness
F-12	Shot-Blast Accumulation Area	Waste pile consisting of coarse sand and steel shot fragments	1974 to present	Underlain by concrete of undetermined thick ness; contained by three concrete walls
F-19	Roll-off Boxes	Metal dumpsters for wood, cardboard (with and without dried paint), office and lunchroom trash	1960s to present	Nonhazardous nature of the wastes and self-contained unit elevated above the ground
F-20	Cupola Baghouse Silo	Steel silo for cupola baghouse dust storage	October 1988 to present	Self-contained unit, integrity appeared adequate
F-23	Former Scrubber	Venturi-type scrubber for fire particles of system sand	1965 to 1985	The unit was dismantled
F-25	Number 9 Cyclone	Cyclone, controlled emissions from system sand recycling	1988	Inactive, converting to cooling system

TABLE III-2

SWMUs AND AOCs WITH LOW OR NO POTENTIAL FOR RELEASE

VALVE PLANT

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Release Controls
V-3	Lead Dross Drum Area	Storage area for drums of lead dross	1978 to present	Located indoors; integrity of floor appeared adequate
V-5	Transfer Dumpsters	Small metal roll-off boxes for transferring waste systems and core butts to the Fittings Plant Staging Area (SWMU F-14)	1970s to present	Nonhazardous nature of the waste managed and self-contained unit elevated above the ground
V-6	Paint Booths	Water-curtain type spray paint booths	1978 to present	The design of the unit, location indoors; integrity of the floor appeared adequate

TABLE III-3

SWMUs AND AOCs WITH LOW OR NO POTENTIAL FOR RELEASE

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Release Controls
S-2	Soil Pipe Roll-off Box	Thirty-cubic-yard metal dumpster	1956 to present	Nonhazardous nature of the waste; self-contained and elevated above the ground
S-3	Special Waste Truck	Truck with pneumatic tank for transferring Special Waste from soil pipe cupola and brass foundry baghouses	October 1988 to present	Self-contained unit; integrity appeared adequate
S-16	Coke Bottom Drop Pile	Waste ash, unburned coke and sand from cupola furnace	1956 to present	Underlain by concrete contained by the east wall of the main foundry building
S-24	Cooling Tower	Water tower cooling clarified water for the silica floor system	1978 to present	This unit discharges directly to the Cooling Tower Sump (SWMU S-25)

Fittings Plant

Twenty-two SWMUs and eight AOCs with a potential for release to one or more media were identified at the Fittings Plant. Several units are waste piles located outdoors without adequate secondary containment. Even though the facility maintains that the waste is nonhazardous, there may be hazardous constituents in the waste which could migrate to soil, ground water and surface water via surface runoff. These units are the Frag Pile (SWMU F-1), the Non-Metallics Sump (SWMU F-2), the Solidification Discharge Area (SWMU F-6), the Breaker Area (SWMU F-7), the Cement Waste Pile (SWMU F-8), and the Excess System Sand Pile (SWMU F-10).

The integrity of many units could not be determined during the VSI due to their location underground. These include the Storm Sewer (SWMU F-17), the Sanitary Sewer (SWMU F-18), and the facility's six untested Underground Storage Tanks (USTs), AOCs F-B through F-G. Other integrity-dependent units are the Slag Sump (SWMU F-3), Vehicle Wash Area Sump (SWMU F-4), and the Oil/Water Separator (SWMU F-5). The VSI team observed that the oil skimmer for the Vehicle Wash Area Sump (SWMU F-4) was not filled to the proper level for separation, indicating the integrity may be impaired. The Oil/Water Separator (SWMU F-5) is underlain by asphalt. However, the asphalt in the vicinity of the unit was covered with oil dry, inhibiting the evaluation of the asphalt's integrity. The Baghouses Units F-21 through F-26 and the Dip Tank Hoods (SWMU F-16) vent to the atmosphere and are regulated by C-HCAPCB. The Fittings Plant manages the on-site Landfill (SWMU F-27) situated on the east bank of the Tennessee River. This unit has managed EP toxic Cupola Baghouse dust prior to the current solidification process. The potential for release from this unit was deemed high.

Two units associated with the Landfill (SWMU F-27) discharge directly to the Tennessee River. The Runoff Pond (SWMU F-28) is designed for runoff control. Overflow from this unit discharges to the River. A pipe buried beneath the Landfill (SWMU F-27) has been observed by TDHE personnel as discharging water to the river during dry weather. According to a U.S. Pipe Landfill Report (Reference 71), rain water infiltrating the Landfill (SWMU F-27) is entering the pipe and discharging to the River. This pipe is associated with the Landfill Discharge Ditch/Pipe (SWMU F-29). The potential for release from the Empty Drum Storage Area (SWMU F-15) was deemed high due to the observed staining in the vicinity of the unit and poor drum storage techniques. Visible staining was also observed in the vicinity of the paint dipping operations. This area is identified as the Coating Area (AOC F-H).

SWMUs and AOCs observed during the VSI are presented in Table III-4 and are identified with the prefix F-.

Valve Plant

Six SWMUs observed at the Valve Plant discharge to the atmosphere and are monitored by C-HAPCB. These units are the Lead Melting Pot Area (SWMU V-4) and the Baghouses units V-7 through V-11. The Brass Foundry Baghouse (SWMU V-7) was deemed to have a potential for release dependent on the integrity of the asphalt beneath the unit. The VSI team observed dust beneath the unit. EP toxicity data for the baghouse dust from this unit indicate 3.1 ppm lead. Other units with release potential which are dependent on integrity are the Cabinet Cleaning Area Drain (SWMU V-1), the Hydrant Testing Sump (SWMU V-2) and Underground Storage Tank No.8 (AOC V-A). An asphalt area located in the vicinity of a compressor building was identified as the Compressor Area (AOC V-B) by the VSI team due to observed staining. SWMUs and AOCs observed during the VSI are presented in Table III-5 and are identified with the prefix V-.

Soil Pipe Division

Twenty-four SWMUs and seven AOCs with the potential for release to one or more media were identified at the Soil Pipe Division. The Scrap Metal Pile (SWMU S-1) contains engine blocks contaminated with oil scattered throughout the unit. The Slag Accumulation Pile (SWMU S-17), the Slag Pile (SWMU S-18), and the Staging Area (SWMU S-19) are located outdoors and may contain hazardous constituents which could migrate to soil, ground water and surface water via surface runoff.

The Shop Sump (SWMU S-4), Slag Sump (SWMU S-5), Naphtha/Asphalt Sump (SWMU S-10) and Number 17 Pit (SWMU S-20) are old units with unknown integrity. Visible staining was observed on the asphalt in the vicinity of the Waste Oil Area (SWMU S-6). Releases for this unit are dependent on the integrity of the asphalt. C-HCAPCB limits the quantity of VOCs emitted to the atmosphere via the paint dipping operations. These units include the Large-Diameter Pipe Drying Areas (S-7), Small-Diameter Pipe Drying Areas (SWMU S-8) and the Paint Dip Traps (SWMU S-9). The Soil Pipe Division maintains five Baghouses Units S-11 through S-15 that release to the atmosphere and are permitted by C-HCAPCB. Releases from the Wastewater Pipes (SWMU S-21), the Sanitary Sewer (SWMU S-27) as well as the six Underground Storage Tanks, Units S-A through S-F, are dependent on integrity. The integrity could not be evaluated due to the below-ground location of the units and areas. Above-ground units, the Clarifier (SWMU S-22) and the Sludge Drying Beds (SWMU S-23) need to be integrity tested for releases to soil and ground water. Due to the proximity of the Clarifier (SWMU S-22) and the Sludge Drying Beds (SWMU S-23) to the Tennessee River, the potential for release to surface water was deemed moderate. A system designed to convey asphalt/naphtha mixture consists of underground pipes and an underground tank. This system has been in operation since 1956 and integrity testing is suggested for this area. This area is the Naphtha/Asphalt Transfer System (AOC S-G). SWMUs and AOCs observed during the VSI and presented in Table III-6 are identified with the prefix S-.

The potential for release and suggestions for further action are presented in Table 4, and suggested sampling approaches are presented in Tables V-1 through V-3, Chapter V of this report.

TABLE III-4

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentially Affected Area
F-1	Frag Pile	Scrap metal pile	1977 to present	Soil, ground wat and surface wate
F-2	Non-Metallics Sump	Sump for precipitation in coke unloading area	1971 to present	Soil, ground wat and surface wate
F-3	Slag Sump	Sump for recirculating slag quench water	1977 to present	Soil and ground water
F-4	Vehicle Wash Area Sump	Sump and oil skimmer for vehicle washing waters	1981 to present	Air, subsurface generation, soil ground water and surface water
F-5	Oil/Water Separator	Removes oil from non-contact cooling water	1970s to present	Air, subsurface generation, soil, ground water and surface water
F-6	Solidification Discharge Area	Temporary accumulation area for fixed baghouse dust	October 1988 to present	Soil, ground wate and surface water
F-7	Breaker Area	Foundry sand, slag, core waste pile	1972 to present	Soil, ground wate and surface water
F-8	Cement Waste Pile	Waste cement pile	1960s to present	Soil, ground wate and surface water
F-10	Excess System Sand Pile	Waste sand source for mixing foundry wastes such as slag prior to disposal	1977 to present	Soil, ground wate and surface water
F-13	Slag Accumulation Area	Slag accumulation point following quenching	1977 to present	Soil and ground water

TABLE III-4

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE
(continued)

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentiall[y] Affected Ar[eas]
F-14	Staging Area	Mixing area for foundry sands, slag, and fixed baghouse dust	1977 to present	Soil, ground w[ater] and surface wa[ter]
F-15	Empty Drum Storage Area	Accumulation area for empty raw product drums	1978 to present	Soil, ground w[ater] and surface wa[ter]
F-16	Dip Tank Hoods	Ducts vapors emitted from paint dripping operations	1987 to present	Air
F-17	Storm Sewer	Discharges non-contact cooling water and runoff from fittings plant facility to the Tennessee River	At a minimum, 1960s to present	Subsurface gas generation, so[il,] ground water a[nd] surface water
F-18	Sanitary Sewer	Discharges sewage and vehicle washing waters	1930s to present	Subsurface gas generation, so[il,] ground water a[nd] surface water
F-21	Cupola Baghouse	Baghouse collects particulates from cupola furnace baghouse	1977 to present	Air
F-22	Ductile Iron Baghouse	Air pollution device; controls emissions from ductile iron operations and fine particles of system sand	1974 to present	Air

TABLE III-4

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE
(continued)

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentially Affected Area
F-24	Griffin Baghouse	Baghouse; controls emissions from shake-out, fine particles of system sand	1960s to present	Air
F-26	Pangborn Baghouse	Baghouse; controls emissions of fine particles of sand, iron, and abrasives	1985 to present	Air
F-27	Landfill	Landfill for foundry wastes including system sand, core butts, cupola baghouse dust, slag and dried paint and asphalt solids	1958 to present	Soil, ground water and surface water
F-28	Runoff Pond	Sediment pond with rock-lined ditches	1985 to present	Soil, ground water and surface water
F-29	Landfill Discharge Ditch/Pipe	Combined sanitary and storm water conveyance system	1977 to present	Soil, ground water and surface water
F-A	Hydraulic Oil Storage Area	Outdoor storage tank for drums of hydraulic oil	1972 to present	Subsurface gas generation, soil, ground water and surface water
F-B	Cupola Fuel Oil Underground Tank 1	Untested, 20,000-gallon, underground tank	1977 to present	Subsurface gas generation, soil and ground water
F-C	Cupola Fuel Oil Underground Tank 2	Fuel oil tank	1977 to present	Subsurface gas generation, soil and ground water

TABLE III-4

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE
(continued)

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentiall Affected Are
F-D	Underground Tank 3	Untested, abandoned, 5,000-gallon, underground diesel tank	1976 to 1984	Subsurface gas generation, soi and ground wate
F-E	Underground Tank 4	Untested, 15,000-gallon, underground diesel tank	1961 to present	Subsurface gas generation, soi and ground wate
F-F F-G	Underground Tank 5 Underground Tank 6	Untested, 1,000-gallon, underground gasoline tank	1968 to present	Subsurface gas generation, soi and ground wate
F-H	Coating Area	Paint staining in the vicinity of the coatings operations	1960s to present	Subsurface gas generation, soi ground water an surface water

TABLE III-5

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE

VALVE PLANT

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentially Affected Area
V-1	Cabinet Cleaning Area Drain	Collects runoff in cabinet cleaning area	1987 to present	Soil and ground water
V-2	Hydrant Testing Sump	Collection system for recirculating hydrant testing water	1978 to present	Soil and ground water
V-4	Lead Melting Pot Area	Vents lead emissions to the atmosphere	1978 to present	Air
V-7	Brass Foundry Baghouse	Baghouse, controlling emissions from brass pouring and melting operations	1970 to present	Air, soil, and ground water
V-8	Brass Grinding Baghouse	Baghouse, controlling emissions from brass grinding operations	1970s to present	Air, soil, and ground water
V-9	Brass Shot-Blast Baghouse	Baghouse, controlling emissions from brass shot-blast operations	1970 to present	Air, soil, and ground water
V-10	Cabinet Cleaning Baghouse	Baghouse, controlling emissions from hydrant shot-blast operations	1988 to present	Air
V-11	Shell Mold Baghouse	Baghouse, controlling emissions from shell mold making machines	1970s to present	Air
V-A	Underground Tank No. 8	Untested, 1,000-gallon underground diesel tank	1984 to present	Subsurface gas generation, soil and ground water
V-B	Compressor Area	Asphalt area with visible staining	Unknown	Subsurface gas generation, soil and ground water

TABLE III-6

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE
(continued)

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentially Affected Area
S-13	Soil Pipe Griffin Baghouse	Baghouse; controls emissions from pouring and shake-out	1979 to present	Air
S-14	Sly 79 Baghouse	Baghouse; controls emissions from the shell core making system	1985 to present	Air
S-15	Zurn Baghouse	Baghouse; controls emissions from grinding operations	1981 to present	Air
S-17	Slag Accumulation Pile	Slag accumulation area after quencing and before transfer to the Staging Area (SWMU S-19)	1956 to present	Soil, ground wa and surface wat
S-18	Slag Pile	Slag accumulation immediately following quenching	1956 to present	Soil, ground wa and surface wat
S-19	Staging Area	Mixing area for foundry waste prior to landfill	1979 to present	Soil, ground wa and surface wat
S-20	Number 17 Pit	Sump receiving release agent slurries and cupola slag water overflow	1960s to present	Soil and ground water
S-21	Wastewater Pipes	Underground pipes connecting Number 17 Pit (SWMU S-20) to the Clarifier (SWMU S-22)	1976 to present	Soil and ground water

TABLE III-6

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE
(continued)

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentially Affected Area
S-22	Clarifier	Concrete settling tank	1976 to present	Soil, ground water and surfa water
S-23	Sludge Drying Beds	Silica flour bentonite mixture sludge drying beds	1976 to present	Soil, ground wa and surface wat
S-25	Cooling Tower Sump	Concrete sump beneath the Cooling Tower (SWMU S-24)	1978 to present	Soil and grounc water
S-26	Sewer Sump	Concrete sump and monitoring flume for discharge to POTW	1976 to present	Soil and grounc water
S-27	Sanitary Sewer	Underground piping system discharging all wastewaters to POTW	1956 to present	Soil, ground wa surface water, subsurface gas
S-28	Former Outfall	Former wastewaters discharge outfall to Tennessee River	1956 to 1981	Soil, ground water and surfa water
S-A	Underground Tank No. 5009	Untested, abandoned 6,000-gallon, under-ground diesel tank	1973 to present	Subsurface gas generation, so and ground wate
S-B	Underground Tank No. 5583	Untested, 10,000-gallon, underground naphtha tank	1961 to present	Subsurface gas generation, so and ground wate
S-C	Underground Tank No. 3	Untested, 1,500-gallon, underground gasoline tank	1980 to present	Subsurface gas generation, so and ground wate

TABLE III-6

SWMUs AND AOCs WITH A POTENTIAL FOR RELEASE
(continued)

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Description	Dates of Operation	Potentially Affected Area
S-D	Underground Tank No. 4	Untested, 20,000-gallon, underground asphalt/naphtha tank	1956 to present	Subsurface gas generation, soil and ground water
S-E	Underground Tank No. 5	Untested, 1,000-gallon, underground diesel tank	1956 to present	Subsurface gas generation, soil and ground water
S-F	Underground Tank No. 6	Untested, 8,127-gallon, gasoline tank	1965 to present	Subsurface gas generation, soil and ground water
S-G	Naphtha/Asphalt Transfer System	Approximately 200 feet of four-inch-diameter ductile iron pipe	1956 to present	Subsurface gas generation, soil and ground water

IV. SUMMARY OF CONCLUSIONS AND SUGGESTED FURTHER ACTIONS

Solid waste management units (SWMUs) and areas of concern (AOCs) which have a potential for release are included in this section. The SWMUs and AOCs listed in Table IV-1 are assessed for their potential for release, and suggested further actions are presented. Subsequent sampling programs required for the SWMUs or AOCs listed in Tables IV-1 through IV-3 are described in Tables V-1 through V-3, Chapter V of this report.

TABLE IV-1

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
F-2	Non-Metallics Sump	The potential for release to air and for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil and ground water is high since the unit discharges directly to the soil and staining was observed during the VSI. The potential for release to surface water is moderate due to the proximity of the surface water.	Conduct soil sampling to determine if hazardous constituents have been released in the discharge area Determine the inte rity of the unit. If the integrity i impaired, conduct sampling beneath the unit to determine if hazardous constituents have been released.
F-3	Slag Sump	The potential for release to air and for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil and ground water is dependent on the integrity of the unit. The potential for release to surface water is low due to the below-grade location of the unit.	Determine the integrity of the unit. If the integrity i impaired, conduct sampling beneath th unit to determine hazardous constituents have been released.
F-4 F-5	Vehicle Wash Area Sump Oil/Water Separator	The potential for release to air is moderate since the surface of the contents of these units are exposed to the atmosphere. The potential for release to other media is dependent on the integrity of the units.	Determine the integrity of the units. If the integrity of the units is impair conduct sampling to determine if hazard constituents have b released.

TABLE IV-1

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actio
F-1 F-6 F-7 F-8 F-10 F-13 F-14	Frag Pile Solidification Discharge Area Breaker Waste Pile Cement Waste Pile Excess System Sand Pile Slag Accumulation Area Staging Area	The potential for release to air and for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil, ground water, and surface water is high due to the location outdoors and lack of secondary containment.	Provide docume tion or conduc sampling of th wastes in thes waste piles to determine if ha ous constituen present. If so conduct soil sampling in the areas of runoff drainage pathwa to determine if hazardous const tuents have bee released.
F-15	Empty Drum Storage Area	The potential for release to air and for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil, ground water, and surface water is high due to observed visible staining in the vicinity of the unit, observed horizontally stored drums and proximity to the river.	Conduct soil sampling in the of observed sta to determine if hazardous const uents have been released. Cons alternative sto techniques.
F-16	Dip Tank Hoods	Releases to the air by this unit are permitted by C-HCAPCB. The potential for subsurface gas generation and release to other media is low due to the nature of the waste and location inside the building.	Continue compli with C-HCAPCB a emission permit

TABLE IV-1

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
F-17	Storm Sewer	The potential for release to air is low due to the below-ground location of the unit. The potential for subsurface gas generation and release to soil and ground water and are dependent on the integrity of the unit.	Discharges are regulated by NPDES. Continue compliance with NPDES permit. Determine the integrity of the unit. If the integrity is impaired, conduct soil sampling to determine if hazardous constituents have been released.
F-18	Sanitary Sewer	The potential for release to air is low due to the below-ground location of the unit. The potential for release from subsurface gas generation, or to soil, surface water and ground water is dependent on the integrity of the unit.	Determine the integrity of the unit. If the integrity is impaired, conduct sampling to determine if hazardous constituents have been released.
F-21 F-22 F-24 F-26	Cupola Baghouse Ductile Iron Baghouse Griffin Baghouse Pangborn Baghouse	Releases to the air by these units are permitted by C-HCAPCB. The potential for subsurface gas generation and release to other media are low since the units are self contained.	Continue compliance with C-HCAPCB Air emission permits.
F-27	Landfill	The potential for release to air is low due to the nature of the waste. The potential for subsurface gas generation is low due to minimal quantities of disposed organic wastes. The potential for release to	Continue current ground water monitoring activities. Consider installation of an impermeable cover.

TABLE IV-1

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actio
F-27	Landfill (cont'd)	soil and ground water is high due to the lack of a protective cap or liner. The potential for release to surface water is moderate due to the proximity of the river, however, runoff water is collected in the Runoff Pond (SWMU F-28).	
F-28	Runoff Pond	The potential for release to air is low due to the nature of the waste. The potential for subsurface gas generation is low due to the low concentration of volatile constituents. The potential for release to soil and ground water is high due to the concentration of solids in the sediment of the unit. The potential for release to surface water is high due to the proximity to the river and since the unit discharges to the river.	Conduct sampli determine if h ous constituen have been rele
F-29	Landfill Discharge Ditch/Pipe	The potential for release to air is low due to the below-ground location of the unit. The potential for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil and ground water is high due to the unlined nature of the unit.	Conduct discha water sampling determine if h ous constituen are being rele If hazardous c stituents are released, samp sediment in th vicinity of th charge to dete

TABLE IV-1

ASSESSMENT OF POTENTIAL FOR RELEASE AND SUGGESTED FURTHER ACTIONS

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
F-29	Landfill Discharge Ditch/Pipe (cont'd)	The potential for release to surface water is high since the unit discharges into the river.	the nature and extent of contamination. Conduct soil sampling within the unit to determine if hazardous constituents have been released.
F-A	Hydraulic Oil Storage Area	The potential for release to air is low due to the low concentration of residual volatile constituents. The potential for subsurface gas generation and release to soil and ground water is dependent on the integrity of the asphalt beneath the unit. The potential for release to surface water is high due to the proximity of surface water.	Determine the integrity of the asphalt. If the integrity is impaired, conduct sampling to determine if hazardous constituents have been released. Consider design changes for runoff control.
F-B F-C F-D F-E F-F F-G	Cupola Fuel Oil Underground Tank 1 Cupola Fuel Oil Underground Tank 2 Cupola Fuel Oil Underground Tank 3 Cupola Fuel Oil Underground Tank 4 Cupola Fuel Oil Underground Tank 5 Cupola Fuel Oil Underground Tank 6	The potential for release to air is low due to the below ground location of the units. The potential for subsurface gas generation and release to soil and ground water is dependent on the integrity of the units. The potential for release to surface water is low due to the below ground location of the units.	In coordination with the Underground Storage Tank program determine the integrity of the units. For the units with impaired integrities, conduct sampling to determine if hazardous constituents have been released.

TABLE IV-1

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Potential for for Release	Suggested Further Acti
F-H	Coating Area	The potential for release to air is low due to the minimal volume of spillage. The potential for subsurface gas generation and release to soil and ground water is dependent on the integrity of the asphalt or concrete in the area. The potential for release to surface water is high since runoff from this area discharges to the Storm Sewer (SWMU F-17) which in turn discharges to the river.	Remove contam sand, allow t and dispose c in Landfill (F-27). Deter the integrity asphalt. If integrity is paired, condu sampling to d mine if hazar constituents been released Consider desi changes to pr surface water tamination an spillage.

TABLE IV-1

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

FITTINGS PLANT

Unit Number	SWMU or Other Area of Concern	Potential for for Release	Suggested Further Acti
F-H	Coating Area	The potential for release to air is low due to the minimal volume of spillage. The potential for subsurface gas generation and release to soil and ground water is dependent on the integrity of the asphalt or concrete in the area. The potential for release to surface water is high since runoff from this area discharges to the Storm Sewer (SWMU F-17) which in turn discharges to the river.	Remove contam sand, allow t and dispose o in Landfill (F-27). Deter the integrity asphalt. If integrity is paired, condu sampling to d mine if hazar constituents been released Consider desi changes to pr surface water tamination an spillage.

TABLE IV-2

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

VALVE PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
V-1	Cabinet Cleaning Area Drain	The potential for release to air is low due to the low concentration of residual volatile constituents. The potential for subsurface gas generation and for release to soil and ground water depends on the integrity of the unit. The potential for release to surface water is low since the unit discharges to the Sanitary Sewer (SWMU F-18).	Determine the integrity of the unit. If the integrity is impaired, conduct soil sampling to determine if hazardous constituents have been released
V-2	Hydrant Testing Sump	The potential for release to air is low due to the indoor location of the unit. The potential for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil and ground water is dependent on the integrity of the unit. The potential for release to surface water is low due to the indoor location of the unit.	Determine the inte rity of the unit. If the integrity o the unit is impaired, conduct so sampling to determine if hazardous constituents have been released.
V-4	Lead Pot Melting Area	Releases to the air by this unit are permitted by C-HCAPCB. The potential for subsurface gas generation and release to other media is low due to the nature of the waste and location inside a building.	Continue complianc with C-HCAPCB air emission permits.

TABLE IV-2

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

VALVE PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
V-7	Brass Foundry Baghouse	Releases to the air by this unit are permitted by C-HCAPCB. The potential for subsurface gas generation is low due to the nature of the waste. The potential for release to soil and ground water is dependent on the integrity of the asphalt beneath the unit. The potential for release to surface water is low since runoff is discharged to the Sanitary Sewer (SWMU F-18).	Continue compliance with C-HCAPCB air emission permit. Determine the integrity of the asphalt beneath the unit. If the integrity is impaired, conduct sampling to determine if hazardous constituents have been released. Consider design changes to prevent spillage.
V-8 V-9	Brass Grinding Baghouse Brass Shot-Blast Baghouse	Releases to the air by these units are permitted by C-HCAPCB. The potential for subsurface gas generation is low due to the nature of the waste. The potential for release to soil and ground water is dependent on the integrity of the units and of the asphalt beneath the unit. The potential for surface water contamination is low since runoff is discharged to the Sanitary Sewer (SWMU F-18).	Continue compliance with C-HCAPCB air emission permits. Determine the integrity of the underlying asphalt. If the integrity is impaired, conduct soil sampling to determine if hazardous constituents have been released.
V-10 V-11	Cabinet Cleaning Baghouse Shell Mold Baghouse	Releases to the air by this unit are permitted by C-HCAPCB. The potential for subsurface gas generation and for release to other media is low due to the nature of the waste.	Continue compliance with C-HCAPCB air emission permits.

TABLE IV-3

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actio
S-1	Scrap Metal Pile	The potential for release to air is low due to the nature of the waste. The potential for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil and ground water is high since the unit is in direct contact with the soil surface. The potential for release to surface water is low since all runoff is discharged to the Sanitary Sewer (SWMU S-27).	Conduct sampli determine if h ous constituen have been rele
S-4	Shop Sump	The potential for release to air is low due to the nature of the waste. The potential for subsurface gas generation is low due to the low concentration of residual volatile constituents. The potential for release to soil is dependent on the integrity of the unit. The potential for release to surface water is dependent on the disposition of the contents of the sump.	Determine the rity of the un and the dispos of liquid. If integrity is impaired, condu sampling to de mine if hazardo constituents ha been released.
S-5	Slag Sump	The potential for release to air is low due to the nature of the waste. The potential for release to soil and ground water is dependent on the integrity of the unit. The potential for release to surface water is low due to the below-grade location of the unit.	Determine the i rity of the uni If the integrit impaired, condu sampling beneat unit to determi hazardous const ents have been released.

TABLE IV-2

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

VALVE PLANT

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
V-A	Underground Tank No. 8	The potential for release to air is low due to the below-ground location of the unit. The potential for subsurface gas generation and release to the soil and ground water is dependent on the integrity of the unit. The potential for release to surface water is low due to the below-ground location of the unit.	Determine the inte-rity of the unit. If the integrity i impaired, conduct sampling to deter-mine if hazardous constituents have been released.
V-B	Compressor Area	The potential for release to air is low due to the time between the release and the observed staining. The potential for subsurface gas generation and for release to soil and ground water is dependent on the integrity of the asphalt. The potential for release to surface water is low since runoff discharges to the Sanitary Sewer (SWMU F-18).	Determine the inte-rity of the asphal If the integrity i impaired, conduct sampling to deter-mine if hazardous constituents have been released.

TABLE IV-3

ASSESSMENT OF POTENTIAL FOR RELEASE
AND SUGGESTED FURTHER ACTIONS

SOIL PIPE DIVISION

Unit Number	SWMU or Other Area of Concern	Potential for Release	Suggested Further Actions
S-6	Waste Oil Area	The potential for release to air is low due to the containment of waste in sealed drums. The potential for subsurface gas generation and release to soil and ground water is dependent on the integrity of the asphalt beneath the unit. The potential for release to surface water is low since all runoff is discharged to the Sanitary Sewer (SWMU S-27).	Determine the integ rity of the asphalt If the integrity is impaired, conduct sampling to determine if hazardous constituents have been released.
S-7	Large-Diameter Pipe Drying Areas	Releases to the air by these units are permitted by C-HCAPCB. The potential for subsurface gas generation and for release to the soil and ground water is dependent on the integrity of the surface beneath the units. Although all surface water discharges to the Sanitary Sewer (SWMU S-27), the potential for release to surface water is moderate due to the proximity of the unit to the Tennessee River.	Continue compliance with C-HCAPCB permits. Determine the integrity of th asphalt or concrete beneath the unit. Determine the drain age pattern for the runoff from the units. If the integrity is impaired, conduct sampling beneath th surface to determin if hazardous consti tuents have been released. If runof drains to the Tennessee River, consider design changes and soil sampling along the river bank.

located within reach of a locomotive equipped with a crane. Limestone and coke are unloaded from railcars into a hopper. Precipitation collecting in this hopper is collected by the Non-Metallics Sump (SWMU F-2) (Reference 70).

The cupola furnace generates the following wastes: cupola baghouse dust, slag, unburned coke and ash, and waste refractories (References 6 and 70). Cupola baghouse dust is collected by the Cupola Baghouse (SWMU F-21). A negative pressure draft from the cupola furnace materials feeding bin is ducted to the Cupola Baghouse (SWMU F-21). Prior to entering the unit, gases from the furnace are ducted into a heat exchanger and cooling tower. Hot air from the heat exchanger is rerouted to the furnace. The cooling water is evaporated during gas quenching (Reference 70).

The cooling process reduces the temperature of the gases to approximately 500 degrees Fahrenheit. The Cupola Baghouse (SWMU F-21) consists of 21 compartments with 60 fiberglass bags per compartment. The cooled gases flow through the bags, which trap the cupola baghouse dust. A system of shakers free the dust particles from the bags. The dust falls into the hoppers located at the base of each compartment. The compartments discharge to a screw conveyor. The screw conveyor discharges to a pneumatic pipe system designed to transfer the dust to the Cupola Baghouse Silo (SWMU F-20). Prior to October 1988, the baghouse dust (EP toxic for lead and cadmium) was mixed with waste foundry sands and disposed of at the on-site Landfill (SWMU F-27). As of October 1988, the baghouse dust is mixed with the following materials:

Material	Quantity
baghouse dust	1,000 pounds
cement	655 pounds
water	62 gallons
sodium silicate	8 gallons

The combined materials are discharged to the Solidification Discharge Area (SWMU F-6) until disposal at the Landfill (SWMU F-27) (Reference 70).

Slag floats on the surface of the flowing molten metal as it is discharged from the cupola furnace. A small dam diverts the top flow (slag) from the bottom flow (molten metal). The slag is quenched with water which fritters the slag into a glass-like consistency. The remaining quenching waters are collected by the Slag Sump (SWMU F-3) for recirculation. The slag falls onto the Slag Accumulation Area (SWMU F-13). The slag is then transferred to the Staging Area (SWMU F-14) prior to disposal at the Landfill (SWMU F-27) (Reference 70).

Each weekend, the cupola furnace is cleaned out and the refactory wall is repaired and prepared for recharging. Unburned coke, sand, ash and broken refractory bricks are discharged to the Coke Bottom Drop Pile (SWMU F-9) (Reference 70).

The Fittings Plant recycles as much system sand (green sand and core sand) as possible. The Green Sand and Core Butt Discharge (SWMU F-11) waste pile consists of green sand contaminated with core sand. The contamination is the result of repeated shake out operations. The Breaker Waste Pile (SWMU F-7) also receives broken cores and excess system sand from the large castings operations. Large cores from the Breaker Waste Pile (SWMU F-7) are salvaged and returned to the core-making machines. Sand and small fragments of steel shot from the shot-blast operations are collected in the Shot-Blast Accumulation Area (SWMU F-12). All sand wastes are transported to the Staging Area (SWMU F-14). Waste foundry sands are mixed with slag, excess system sand from the Excess System Sand Pile (SWMU F-10), and other baghouse dusts for disposal at the Landfill (SWMU F-27) (References 6 and 70).

The Fittings Plant maintains the following active air emission control units: the Ductile Iron Baghouse (SWMU F-22), the Griffin Baghouse (SWMU F-24) and the Pangborn Baghouse (SWMU F-26). The Former Scrubber (SWMU F-23) previously managed dust and emissions from Unit 9 mold pouring and shake out. This unit was dismantled in 1985. Emissions from Unit 9 were rerouted to the Ductile Iron Baghouse (SWMU F-22). The capacity of the Ductile Iron Baghouse (SWMU F-22) was increased by 50 percent to manage the additional waste. This unit also controls emissions generated from the ductile iron operations. Approximately 3.3 pounds of dust is generated per ton of ductile iron produced. Dust from the ductile iron operations consists primarily of magnesium oxide (References 6 and 70). The Griffin Baghouse (SWMU F-24) controls emissions from the green sand reclaiming system. The Pangborn Baghouse (SWMU F-26) controls emissions from the shot blast and grinding operations. The Number 9 Cyclone (SWMU F-25) previously controlled emissions from the green sand system. The facility is converting the unit to a cooling system (References 6 and 70). The baghouse wastes are collected in hoppers at the base of each unit and transferred to the Staging Area (SWMU F-14) prior to Landfill (SWMU F-27) disposal. Emissions in the large casting areas are uncontrolled. Ductile iron slag contains 70 percent iron and is discharged to the Breaker Waste Pile (SWMU F-7). An electromagnet recovers the iron for remelting. The remaining waste is transferred to the Staging Area (SWMU F-14) for mixing prior to Landfill (SWMU F-27) disposal (Reference 70).

The Landfill (SWMU F-27) has been active since 1956 and has received predominantly waste foundry sands (Reference 71). System sand represents 77.5 percent of the foundry waste generated by all three plants. System sand includes green sand; core sand; airset and pepset cores; and isocure cores (References 70 and 71). Green sand is 99 percent silicon dioxide with the remaining one percent comprised of seacoal (a mixture of bituminous coal and styrene butadiene), bentonite and wood flour (pulverized cellulose and lignin) (Reference 6). Core sand is 91 percent silicon dioxide, 3 percent phenol-formaldehyde resin, 0.85 percent hexamethylene-tetramine (HEXA), 0.2 percent iron oxide, and 0.2 percent calcium searate. The remainder is water (Reference 6). The Valve and Fittings Plants utilize isocure, airset and pepset cores (Reference 6). Airset and pepset cores are 98 percent silicon dioxide, 1.5 percent phenol and 0.5 percent benzene sulfonic acid (Reference 6). Isocure cores are 98 percent silicon dioxide with the remaining 2 percent comprised of 55 percent phenolic resin and 45 percent polymeric isocyanate catalyst triethylamine (TEA). TDHE has determined this material is a Special Waste. Isocure sand and core butts represent 1.5 percent of the waste received by the Landfill (SWMU F-27) (References 6 and 71).

Fifteen percent of the foundry waste is slag including desulfurized ladle slag from the ductile iron operations (References 6 and 71). Slag is 48.5 percent silicon dioxide, 24.4 percent calcium oxide, 16 percent aluminum oxide and 3.2 percent iron oxide. The remainder is composed of magnesium oxide, manganese and sulfur (Reference 6). Desulfurized ladle slag is 70 percent cast iron, 7 percent calcium sulfide, 19 percent calcium oxide and 4 percent calcium carbide. The iron is reclaimed for remelting (References 6 and 70).

Sludge generated by the Soil Pipe Division's silica flour release system represents 1.2 percent of the Landfill (SWMU F-27) waste. The silicon flour/bentonite sludge is 93 percent silicon dioxide flour and 7 percent bentonite. Acetic acid extraction analysis for the sludge indicates concentrations of 0.2 ppm lead, 0.13 ppm arsenic, 0.17 ppm barium, 0.1 ppm cadmium and 0.11 ppm chromium (References 6 and 27).

Cupola Baghouse (SWMU F-21) dust represents 1.5 percent of the Landfill (SWMU F-27) waste. EP toxicity data for the cupola baghouse dust indicates 37 ppm lead, 1.6 ppm cadmium and 0.48 ppm barium. Samples collected from the Landfill (SWMU F-27) indicate 7.7 ppm lead, 1.3 ppm cadmium and 0.22 ppm barium (References 5, 6 and 71).

Baghouse dust from the brass melting and grinding operation makes up 0.1 percent of the waste managed by the Landfill (SWMU F-27). Analysis of the dust from the melting operations indicates concentrations of 2.5 ppm lead, and analysis of the dust from the brass grinding operations indicates a concentration of 3.1 ppm (References 2, 6 and 71).

Two percent of the Landfill (SWMU F-27) waste is broken refractory linings from the cupola furnaces and ladles. Refractories consist of 17 to 95 percent aluminum oxide, 25 to 54 percent silicon dioxide, 0 to 0.6 percent calcium dioxide, 0 to 35 percent carbon, 0 to 35 percent zircon oxide and traces of iron oxide and magnesium oxide (Reference 6).

Less than 0.5 percent each of the following wastes are also disposed of at the Landfill (SWMU F-27): unburned coke, Ductile Iron Baghouse (SWMU F-22) dust, cement lining waste, dried paint waste (asphalt and enamel paints) and grinding and shot-blast waste (Reference 6).

Two ground-water monitoring wells have been installed at the Landfill (SWMU F-27), one upgradient and one downgradient. The wells were installed during 1985. Twenty-one ppm iron and 0.01 ppm lead were detected in samples taken December 9, 1985. Samples taken October 27, 1987, detected 15 ppm iron and 0.14 ppm lead (Reference 71).

The Landfill Discharge Ditch/Pipe (SWMU F-29) receives overflow from a City of Chattanooga regulator chamber. During periods of wet weather, overflow from the regulator discharges to a native soil ditch located east of the Landfill (SWMU F-27). The ditch discharges to a 72-inch corrugated metal pipe (CMP). The CMP is buried beneath the Landfill (SWMU F-27) and ultimately discharges to the Tennessee River. According to the Foundry Landfill Operations Manual prepared by U.S. Pipe Consultants (EDGE), rainfall infiltrating the Landfill discharges to the CMP. Analysis of the discharge from samples taken March 26, 1987, and October 27, 1987, indicates 1.1 ppm iron, 0.012 ppm lead, and 2.1 ppm iron, 0.06 ppm lead, respectively (References 7, 15, and 71).

Runoff from the Landfill (SWMU F-27) is collected by the Runoff Pond (SWMU F-28). The unit is an unlined pond with a rock-lined ditch. Overflow from this unit discharges to the Tennessee River (References 70 and 71).

The Storm Sewer (SWMU F-17) discharges runoff and non-contact cooling water to the Tennessee River via outfalls 001 and 002. Approximately 48,000 gallons per day of non-contact shell core machine cooling water is discharged to outfall 002, and approximately 64,000 gallons per day of non-contact hydraulic heat exchange cooling water is discharged to outfall 001. The cooling water discharging to outfall 001 is treated by the Oil/Water Separator (SWMU F-5) (References 53, 54 and 70).

The Sanitary Sewer (SWMU F-18) receives approximately 105,000 gallons of water per day from the Fittings Plant sanitary facilities. Other waste received by this unit includes the contents of the Vehicle Wash Area Sump (SWMU F-4) consisting of wash water, oil, grease and detergent. The sump is equipped with an oil skimmer. However, the VSI team observed the sump was not filled to the correct level to facilitate proper oil skimming (Reference 70).

The Fittings Plant consumes 305,000 gallons of water per day. Approximately 112,000 gallons discharge to the Tennessee River, 105,000 gallons discharge to the POTW and 88,000 gallons evaporate per day (Reference 54).

The coatings operation at the Fittings Plant utilizes an enamel paint diluted with 1,1,1-trichloroethane. Large-diameter fittings are spray painted and smaller-diameter fittings are dipped in dip tanks. Emissions in this area are directed to the atmosphere via the Dip Tank Hoods (SWMU F-16). Paint is received by the facility in 300-gallon containers. The dip tanks are filled by connecting the paint tank to an inlet on the paint container which discharges to the dip tanks. Approximately five feet from the inlet to the paint tanks is a doorway. Paint-contaminated mixing sticks stored in this area drip onto the alley outside the building. There was drippage on the door step and in the alley. Both areas of staining are referred to as the Coating Area (AOC F-H). Paint drippage on the coating area is collected on cardboard or plastic, then disposed of in the Roll-off Boxes (SWMU F-19). Empty paint containers and 1,1,1-trichloroethane drums are transported to the Empty Drum Storage Area (SWMU F-15). The coatings operation also lines pipe fittings with cement. Waste cement accumulates at the Cement Waste Pile (SWMU F-8) prior to disposal at the Landfill (SWMU F-27) (References 57 and 70).

Valve Plant

The Valve Plant is a brass foundry and fire hydrant assembly plant. Brass ingots are melted in electric induction areas, and the molten brass is poured into various molds. Emissions from the brass foundry operations are controlled by the Brass Foundry Baghouse (SWMU V-7). Emissions from the mold making process are controlled by the Shell Mold Baghouse (SWMU V-11). Emissions from the brass grinding and brass shot-blast operations are controlled by the Brass Grinding Baghouse (SWMU V-8) and the Brass Shot-Blast Baghouse (SWMU V-9), respectively (References 6 and 70). Except for the shell mold waste, dust collected by the baghouses above is transferred to the Fittings Plant for treatment via the Special Waste Truck (SWMU S-3). Particulates collected by the Shell Mold Baghouse (SWMU V-11) are transferred to the Waste Area located on the west side of the facility. Broken cores and excess molding sand are transferred to the Transfer Dumpsters (SWMU V-5) via front-end loaders. Trucks transport the Transfer Dumpsters to the Fittings Plant Staging Area (SWMU F-14) (Reference 70).

The cast iron housings and pipes for fire hydrants are manufactured at the Fittings Plant. The castings are shot blasted and ground to specification prior to assembly. Emissions from these operations are controlled by the Cabinet Cleaning Baghouse (SWMU V-10). Runoff in the cabinet cleaning area is collected by the Cabinet Cleaning Area Drain (SWMU V-1). The precipitation collected by this unit evaporates (Reference 70).

The brass castings are machined and assembled into various valves and fittings. Many of the valves are assembled onto the fire hydrant housings. The valves are sealed into the cast iron housings with molten lead. Emissions from the lead melting pot are vented to the atmosphere, and spillage is scraped off the floor and remelted. Lead dross is skimmed off the surface of the pot and discharged to a drum. Lead dross contains 38 ppm lead. The drums are stored in the Lead Dross Drum Area (SWMU V-3). U.S. Pipe exchanges the lead dross with R. Lavin and Sons, Chicago, Illinois, for credit toward purchasing brass ingots (References 47 and 70).

When the fire hydrants are assembled, each hydrant is integrity tested with water. Water utilized for integrity testing the hydrants is collected by the Hydrant Testing Sump (SWMU V-2). The water is recirculated (Reference 70).

The Valve Plant maintains two waterfall curtain Paint Booths (SWMU V-6) for spray painting operations. Excess atomized spray paint is drawn to the water falling behind the products during spraying operations. Excess paint collects in the reservoir beneath the falling water. Paint waste accumulates on the surface. The surface is periodically skimmed. Excess paint waste is disposed of at the Landfill (SWMU F-27) (Reference 70).

The VSI team observed black oily stains on the asphalt in the vicinity of a compressor shed. The stained area was approximately 25 square feet. At the time of the VSI, the alley adjacent to the stained area was used to store crates of machined parts covered with a light oil. This area has been designated as an area of concern and referred to as the Compressor Area (AOC V-B). Facility representatives could not provide information regarding the source of the staining (Reference 70).

Soil Pipe Division

The Soil Pipe Division maintains two cupola furnaces located in the northeast section of the facility. An overhead crane manages the Scrap Metal Pile (SWMU S-1) located at various locations within the craneway (Reference 70).

The cupola furnaces generate the following wastes: cupola baghouse dust, slag, unburned coke and ash, and waste refractories (References 6 and 7). Cupola baghouse dust is collected by the Soil Pipe Cupola Baghouse (SWMU S-11). A negative pressure draft from the cupola furnace feeding bin is ducted to the Soil Pipe Cupola Baghouse (SWMU S-11). Prior to entering the unit, gases from the furnace are vented into a heat exchanger and cooling tower. Hot air from the heat exchanger is recirculated back to the furnace. The cooling water is evaporated during gas quenching. The cooling process reduces the temperature of the gases to approximately 500 degrees Fahrenheit. The Soil Pipe Cupola Baghouse consists of 21 compartments with 60 fiberglass bags per compartment. The cooled gases flow through the bags which trap the cupola baghouse dust. A system of shakers free the dust particles from the bags. The dust falls into the hoppers located at the base of each compartment. The compartments discharge into a screw conveyor. The screw conveyor discharges the dust into the Special Waste Truck (SWMU S-3) which transfers the waste to the Fittings Plant Cupola Baghouse Silo (SWMU F-20) (References 37, 42 and 70). Slag floats on the surface of the molten metal as it is discharged from the cupola furnace. A small dam diverts the top flow (slag) from the bottom flow (molten metal). The slag is quenched with water which fritters the slag into a glass-like consistency. The remaining quenching waters are collected by the Slag Sump (SWMU S-5). The slag falls onto the Slag Pile (SWMU S-18) and is transferred to the Slag Accumulation Area (SWMU S-17) prior to disposal at the Landfill (SWMU F-27) (References 6 and 70).

The cupola furnaces alternate weeks of operation. When a furnace is not operating, it is cleaned and repaired. Unburned coke, sand and ash are discharged to the common Coke Bottom Drop Pile (SWMU S-16). Broken refractory bricks are discharged to the unit, as well (References 6 and 70).

The disamatic pipeline is the only pipeline utilizing system and core sand. The disamatic line recycles the green sand. Emissions from this area as well as disamatic pouring and shake out are controlled by the Soil Pipe Griffin Baghouse (SWMU S-13). Emissions generated during green sand preparation are controlled by the DCE Vokes Baghouse (SWMU S-12). Contaminated sand, baghouse sand and broken cores are stored at the Soil Pipe Staging Area (SWMU S-19). After mixing at the staging area, foundry wastes are mixed and disposed of at the Landfill (SWMU F-27) (References 6 and 70).

Baghouse dust from the Sly 79 Baghouse (SWMU S-14) and the Zurn Baghouse (SWMU S-15) is also transferred to the Soil Pipe Staging Area (SWMU S-19). The wastes collected by these units are emissions from the core making machines and from the shot-blast/grinding operations, respectively (References 6, 34 and 70).

The Soil Pipe Division utilizes permanent molds. The molds are spinning molds which are cylinders hollowed out to various diameters. A silica flour/bentonite slurry is poured over the mold before molten metal is poured. The mold spins, thereby forming a pipe inside the mold. Excess slurry water from the various spinning mold lines is collected by the Number 17 Pit

(SWMU S-20). The unit is equipped with a pump which pumps the excess slurry to the Clarifier (SWMU S-22) via the Wastewater Pipes (SWMU S-21). The Number 17 Pit (SWMU S-20) also receives overflow from the Slag Sump (SWMU S-5) (References 6, 27 and 70).

The Wastewater Pipes (SWMU S-21) consist of two four-inch-diameter pipes approximately 500 feet long connecting the Number 17 Pit (SWMU S-20) to the Clarifier (SWMU S-22). A six-inch-diameter return pipe transfers treated cooling water from the Cooling Tower (SWMU S-24) back to the silica flour/bentonite slurry system (Reference 70). The Clarifier (SWMU S-22) is a 30-foot-diameter concrete tank receiving slurry water from the silica flour bentonite system. The under flow from the Clarifier (SWMU S-22) is discharged to the Sludge Drying Beds (SWMU S-23). Overflow from the Clarifier is transferred to the Cooling Tower (SWMU S-24) and collected by the Cooling Tower Sump (SWMU S-25). The water is pumped back to the silica flour/bentonite system via the Wastewater Pipes (SWMU S-21). Overflow from the Cooling Tower Sump (SWMU S-25) is discharged to the Sewer Sump (SWMU S-26). At the Sewer Sump (SWMU S-26), the overflow is monitored bi-weekly. Approximately 20,000 gallons of overflow are discharged to the POTW per day (References 27 and 70).

The sludge from the two Sludge Drying Beds (SWMU S-23) is transported weekly to the Landfill (SWMU F-27) via trucks. Analysis of the sludge indicates 0.2 ppm lead, 0.1 ppm cadmium, 0.11 ppm chromium, 0.13 ppm arsenic and 0.17 ppm barium (Reference 6).

The Soil Pipe Division uses a naphtha/asphalt mixture for the pipe coating operations. The mixture is combined in an above-ground tank. Spillage from the mixing operation and leakage from the naphtha and asphalt pumps are collected by the Naphtha/Asphalt Sump (SWMU S-10). Each weekend, the contents of the naphtha/asphalt mixing tank are pumped via underground pipes to an underground tank located near the small pipe dipping operations. This combined system is referred to as the Naphtha/Asphalt Transfer System (AOC S-G) (Reference 70).

Large-diameter pipes are dipped in bundles and transported to the Large-Diameter Pipe Drying Areas (SWMU S-7). Drippage in the area is absorbed by sand which is disposed of in the Landfill (SWMU F-27). Small-diameter pipes and fittings are dipped in tanks, and drippage is collected by the Paint Dip Traps (SWMU S-9). The Paint Dip Traps are periodically scraped and the dried paint solids are disposed of in the Landfill (SWMU F-27). Small-diameter pipes are removed from the dipping trees and stacked in bundles. The bundles are transported to the Small-Diameter Pipe Drying Areas (SWMU S-8). Drippage is usually from the inside diameter of the pipes. Pipes are stacked in bundles over timbers spaced far enough apart to keep the pipe elevated above the surface. Drippage collects in troughs placed beneath the ends of the pipes. The troughs are scraped periodically, and the dried paint waste is disposed of at the Landfill (SWMU S-27). The C-HCAPCB limits the amount of VOCs per gallon paint used and the total number of gallons of paint used per year. Volatiles from the paint evaporate and the dried paint solids are landfilled (References 54, 70 and 71).

Prior to 1981, all facility runoff was discharged to the Tennessee River via the Former Outfall (SWMU S-28). Due to chronic violation of the facility's NPDES permit, adjustments were made so that all runoff discharges to the Sanitary Sewer (SWMU S-27) (References 17, 18 and 22).

The Soil Pipe Roll-off Box (SWMU S-2) receives office and lunchroom trash and combustibles. Combustibles include cardboard paper and wood. Waste oil is contained in drums at the Waste Oil Area (SWMU S-6) located in the central section of the facility. The VSI team observed the Shop Sump (SWMU S-4) located in the vicinity of the maintenance garage in the north section of the facility. Facility personnel did not provide information regarding the disposition of the contents (Reference 70).

HISTORY OF RELEASES

The Valve and Fittings Plant discharged in excess of NPDES Permit TND0002429 on December 9 and 10, 1980; on March 18, 1982; in February and December 1983; and on March 19 and 20, 1984. Samples either provided by the facility as DMR or taken by TDHE during compliance inspections indicated excessive levels of suspended solids, settlable solids, BOD, and total iron and improper pH. According to the facility's response to NOVs, these violations occurred following periods of excessive rainfall and snow melt coupled with recent spreading of crushed limestone at the facility (References 58 and 59).

During 1982, the Soil Pipe Cupola Baghouse (SMWU S-11), maintained by the Soil Pipe Division, reported 132 violations of its air permit from January to June 29, 1982, with approximately half of those violations attributed to bag failure. The facility's rate of four to six bag replacements per week was unacceptable to C-HCAPCB. The unit was installed in 1971 and represents the first air pollution device at a U.S. Pipe plant. The Bureau recommended replacing the baghouse (References 43 and 44).

The Former Scrubber (SWMU F-23) designed to control emissions from the Unit 9 sand molding and cooling system was in violation of excess opacity readings of up to 45 percent. The violations occurred January 22, 1985, and May 7, 10, 13, and 24, 1985. The unit was removed from service, and emissions were rerouted through the Ductile Iron Baghouse (SWMU F-22) (References 62 and 65).

The Valve and Fittings Plant operated its cupola furnace in excess of 20 percent opacity for greater than 5 minutes and in excess of 28.9 pounds per hour on April 13 and 14, 1988. The charged cupola furnace operated with the cap open for 15.83 hours, releasing 2652 pounds of emissions to the atmosphere (Reference 58).

The facilities have disposed of cupola baghouse dust at the Landfill (SWMU F-27) since 1972 (Soil Pipe Division) and 1977 (Fittings Plant). Soil sampling conducted by U.S. EPA in April 1986 indicated concentrations of 7.7 ppm lead and 1.3 ppm cadmium (Reference 5). A summary of ground water analysis from the downgradient well at the Landfill (SWMU F-27) indicates average concentrations of 0.01 ppm total lead, 7.8 ppm total iron, 0.28 ppm formaldehyde and 0.003 ppm cadmium. The most recent analysis, conducted on October 27, 1987, indicated concentrations of 0.14 ppm lead, 15 ppm iron, 0.1 ppm formaldehyde and 0.009 ppm cadmium (Reference 71). Analysis of discharge from the Landfill Discharge Ditch/Pipe (SWMU F-29) indicates concentrations of 0.06 ppm total lead, 2.1 ppm total iron, 0.01 formaldehyde and 0.001 ppm cadmium (Reference 71).

III. SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN

As a result of the Preliminary Review (PR) of the available file material and the Visual Site Inspection conducted on January 23 and 24, 1988, 68 Solid Waste Management Units (SWMUs) and 17 Areas of Concern (AOCs) were identified. Fourteen SWMUs have low or no potential for release to the environment and are listed in Table 2. Fifty-four SWMUs and 17 AOCs have the potential for release to one or more environmental media. These units are listed in Table III-4 through Table III-1, 2, and 3. The potentials for release are discussed in Chapter IV. All SWMUs and AOCs are described in Attachment B, which provides conditions and information observed during the VSI and identified in the PR. Approximate location of SWMUs and AOCs are presented in Figures III-1, III-2, and III-3.

DESCRIPTION OF UNITS WITH LOW OR NO POTENTIAL FOR RELEASE

Fittings Plant

Seven SWMUs with low or no potential for release were identified at the Fittings Plant. Most of the units are underlain by concrete and contained by walls or roofs. These units include the Coke Bottom Drop Pile (SWMU F-9), Green Sand and Core Butt Discharge (SWMU F-11), and the Shot-Blast Accumulation Area (SWMU F-12). The Roll-off Boxes (SWMU F-19) manage nonhazardous wastes and are positioned above ground. Two air pollution control devices were determined to have low or no potential for release. The Former Scrubber (SWMU F-23) has been dismantled and the Number 9 Cyclone (SWMU F-25) is being converted to a cooling system. The Cupola Baghouse Silo (SWMU F-20) is self contained and underlain by concrete. SWMUs observed at the Fittings Plant are presented in Table III-1 and are identified with the prefix F-.

(SWMU S-20). The unit is equipped with a pump which pumps the excess slurry to the Clarifier (SWMU S-22) via the Wastewater Pipes (SWMU S-21). The Number 17 Pit (SWMU S-20) also receives overflow from the Slag Sump (SWMU S-5) (References 6, 27 and 70).

The Wastewater Pipes (SWMU S-21) consist of two four-inch-diameter pipes approximately 500 feet long connecting the Number 17 Pit (SWMU S-20) to the Clarifier (SWMU S-22). A six-inch-diameter return pipe transfers treated cooling water from the Cooling Tower (SWMU S-24) back to the silica flour/bentonite slurry system (Reference 70). The Clarifier (SWMU S-22) is a 30-foot-diameter concrete tank receiving slurry water from the silica flour bentonite system. The under flow from the Clarifier (SWMU S-22) is discharged to the Sludge Drying Beds (SWMU S-23). Overflow from the Clarifier is transferred to the Cooling Tower (SWMU S-24) and collected by the Cooling Tower Sump (SWMU S-25). The water is pumped back to the silica flour/bentonite system via the Wastewater Pipes (SWMU S-21). Overflow from the Cooling Tower Sump (SWMU S-25) is discharged to the Sewer Sump (SWMU S-26). At the Sewer Sump (SWMU S-26), the overflow is monitored bi-weekly. Approximately 20,000 gallons of overflow are discharged to the POTW per day (References 27 and 70).

The sludge from the two Sludge Drying Beds (SWMU S-23) is transported weekly to the Landfill (SWMU F-27) via trucks. Analysis of the sludge indicates 0.2 ppm lead, 0.1 ppm cadmium, 0.11 ppm chromium, 0.13 ppm arsenic and 0.17 ppm barium (Reference 6).

The Soil Pipe Division uses a naphtha/asphalt mixture for the pipe coating operations. The mixture is combined in an above-ground tank. Spillage from the mixing operation and leakage from the naphtha and asphalt pumps are collected by the Naphtha/Asphalt Sump (SWMU S-10). Each weekend, the contents of the naphtha/asphalt mixing tank are pumped via underground pipes to an underground tank located near the small pipe dipping operations. This combined system is referred to as the Naphtha/Asphalt Transfer System (AOC S-G) (Reference 70).

Large-diameter pipes are dipped in bundles and transported to the Large-Diameter Pipe Drying Areas (SWMU S-7). Drippage in the area is absorbed by sand which is disposed of in the Landfill (SWMU F-27). Small-diameter pipes and fittings are dipped in tanks, and drippage is collected by the Paint Dip Traps (SWMU S-9). The Paint Dip Traps are periodically scraped and the dried paint solids are disposed of in the Landfill (SWMU F-27). Small-diameter pipes are removed from the dipping trees and stacked in bundles. The bundles are transported to the Small-Diameter Pipe Drying Areas (SWMU S-8). Drippage is usually from the inside diameter of the pipes. Pipes are stacked in bundles over timbers spaced far enough apart to keep the pipe elevated above the surface. Drippage collects in troughs placed beneath the ends of the pipes. The troughs are scraped periodically, and the dried paint waste is disposed of at the Landfill (SWMU S-27). The C-HCAPCB limits the amount of VOCs per gallon paint used and the total number of gallons of paint used per year. Volatiles from the paint evaporate and the dried paint solids are landfilled (References 54, 70 and 71).

Prior to 1981, all facility runoff was discharged to the Tennessee River via the Former Outfall (SWMU S-28). Due to chronic violation of the facility's NPDES permit, adjustments were made so that all runoff discharges to the Sanitary Sewer (SWMU S-27) (References 17, 18 and 22).

The Soil Pipe Roll-off Box (SWMU S-2) receives office and lunchroom trash and combustibles. Combustibles include cardboard paper and wood. Waste oil is contained in drums at the Waste Oil Area (SWMU S-6) located in the central section of the facility. The VSI team observed the Shop Sump (SWMU S-4) located in the vicinity of the maintenance garage in the north section of the facility. Facility personnel did not provide information regarding the disposition of the contents (Reference 70).

HISTORY OF RELEASES

The Valve and Fittings Plant discharged in excess of NPDES Permit TND0002429 on December 9 and 10, 1980; on March 18, 1982; in February and December 1983; and on March 19 and 20, 1984. Samples either provided by the facility as DMR or taken by TDHE during compliance inspections indicated excessive levels of suspended solids, settlable solids, BOD, and total iron and improper pH. According to the facility's response to NOVs, these violations occurred following periods of excessive rainfall and snow melt coupled with recent spreading of crushed limestone at the facility (References 58 and 59).

During 1982, the Soil Pipe Cupola Baghouse (SMWU S-11), maintained by the Soil Pipe Division, reported 132 violations of its air permit from January to June 29, 1982, with approximately half of those violations attributed to bag failure. The facility's rate of four to six bag replacements per week was unacceptable to C-HCAPCB. The unit was installed in 1971 and represents the first air pollution device at a U.S. Pipe plant. The Bureau recommended replacing the baghouse (References 43 and 44).

The Former Scrubber (SWMU F-23) designed to control emissions from the Unit 9 sand molding and cooling system was in violation of excess opacity readings of up to 45 percent. The violations occurred January 22, 1985, and May 7, 10, 13, and 24, 1985. The unit was removed from service, and emissions were rerouted through the Ductile Iron Baghouse (SWMU F-22) (References 62 and 65).

The Valve and Fittings Plant operated its cupola furnace in excess of 20 percent opacity for greater than 5 minutes and in excess of 28.9 pounds per hour on April 13 and 14, 1988. The charged cupola furnace operated with the cap open for 15.83 hours, releasing 2652 pounds of emissions to the atmosphere (Reference 58).

The facilities have disposed of cupola baghouse dust at the Landfill (SWMU F-27) since 1972 (Soil Pipe Division) and 1977 (Fittings Plant). Soil sampling conducted by U.S. EPA in April 1986 indicated concentrations of 7.7 ppm lead and 1.3 ppm cadmium (Reference 5). A summary of ground water analysis from the downgradient well at the Landfill (SWMU F-27) indicates average concentrations of 0.01 ppm total lead, 7.8 ppm total iron, 0.28 ppm formaldehyde and 0.003 ppm cadmium. The most recent analysis, conducted on October 27, 1987, indicated concentrations of 0.14 ppm lead, 15 ppm iron, 0.1 ppm formaldehyde and 0.009 ppm cadmium (Reference 71). Analysis of discharge from the Landfill Discharge Ditch/Pipe (SWMU F-29) indicates concentrations of 0.06 ppm total lead, 2.1 ppm total iron, 0.01 formaldehyde and 0.001 ppm cadmium (Reference 71).

III. SOLID WASTE MANAGEMENT UNITS AND OTHER AREAS OF CONCERN

As a result of the Preliminary Review (PR) of the available file material and the Visual Site Inspection conducted on January 23 and 24, 1988, 68 Solid Waste Management Units (SWMUs) and 17 Areas of Concern (AOCs) were identified. Fourteen SWMUs have low or no potential for release to the environment and are listed in Table 2. Fifty-four SWMUs and 17 AOCs have the potential for release to one or more environmental media. These units are listed in Table III-4 through Table III-1, 2, and 3. The potentials for release are discussed in Chapter IV. All SWMUs and AOCs are described in Attachment B, which provides conditions and information observed during the VSI and identified in the PR. Approximate location of SWMUs and AOCs are presented in Figures III-1, III-2, and III-3.

DESCRIPTION OF UNITS WITH LOW OR NO POTENTIAL FOR RELEASE

Fittings Plant

Seven SWMUs with low or no potential for release were identified at the Fittings Plant. Most of the units are underlain by concrete and contained by walls or roofs. These units include the Coke Bottom Drop Pile (SWMU F-9), Green Sand and Core Butt Discharge (SWMU F-11), and the Shot-Blast Accumulation Area (SWMU F-12). The Roll-off Boxes (SWMU F-19) manage nonhazardous wastes and are positioned above ground. Two air pollution control devices were determined to have low or no potential for release. The Former Scrubber (SWMU F-23) has been dismantled and the Number 9 Cyclone (SWMU F-25) is being converted to a cooling system. The Cupola Baghouse Silo (SWMU F-20) is self contained and underlain by concrete. SWMUs observed at the Fittings Plant are presented in Table III-1 and are identified with the prefix F-.

and manganese (References 22, 24, 31). However, the facility insisted it could meet the limits of its permit by making minor adjustments and fixing leaks. Permit 77-638 was issued on October 27, 1977 (Reference 24).

State NPDES permit TN 0003808, issued to the Soil Pipe Division on April 6, 1979, established effluent limits and required the facility to submit monitoring reports on a monthly basis. From May 1979 to January 1981, the facility was in violation of its NPDES permit for 15 monthly reporting periods and failed compliance inspection sampling in August of 1979 and 1980. Effluent limits were exceeded for manganese, iron, zinc, phenols, total chromium, BOD, surfactants, suspended solids and settleable solids (Reference 22). On April 21, 1981, Commissioner's Order 81-006 directed U.S. Pipe to cease discharging all cooling water and process wastewater to the Tennessee River by August 10, 1981. The order also directed the facility to submit plans for eliminating all dry weather discharges by May 15, 1981, and to finalize plans by June 19, 1981 (Reference 22). The facility complied with the Commissioner's Order and made the following changes to its wastewater management system:

1. A new pumping system with a sump and 50-gallons-per-minute pumps was installed;

2. The cooling tower sump was equipped with a high water-level alarm and the overflow pipe was plugged;

3. The Number 17 Pit (SWMU S-20) receiving silica flour/bentonite slurries and discharging overflow to the storm sewer was sealed;

4. The slag system overflow pipe was plugged;

5. All paved areas located on the facility property were to be manually swept or cleaned with a power sweeper.

Although the facility complied with the Commissioner's Order and no longer discharged to the Tennessee River, an Agreed Order was issued on February 18, 1988, ordering U.S. Pipe to pay civil penalties for the 1979 to 1981 violations of its previous NPDES Permit (References 17, 19, 18 and 22).

Valve and Fittings Plant

According to a report on a compliance inspection conducted December 9 and 10, 1980, and an NOV issued January 23, 1981, the Valve and Fittings Plant was in violation of NPDES Permit TN0002429. Effluent discharging from NPDES-permitted outfall 001 exceeded the permit's suspendable solids standard and appeared gray with an oily sheen. Outfall 001 exceeded permit limits for phenols, suspended solids, and settlable solids and appeared black with an oily sheen. The NOV also cited deficient sampling techniques and procedures. The flow capacity reported for outfall 002 was based on averaging past dry weather data, and samples were not properly acid fixed (Reference 53).

An NOV issued to the Valve and Fittings Plant on March 18, 1982, cited the facility's lack of continuous flow measurement, unsatisfactory operation and maintenance of monitoring equipment, improper preservation techniques for BOD samples and improper holding time for pH samples (Reference 52).

TDHE reissued the Valve and Fittings Plant NPDES Permit TN0002429 in 1984. The permit allows the facility to discharge to the Tennessee River via outfalls 001 and 002. According to the permit and a performance audit inspection (PAI) conducted on August 16, 1984, Outfalls 001 and 002 receive yard drainage and non-contact cooling water from hydraulic and shell core machines (References 52, 53, and 54).

The conditions of NPDES Permit TN0002429 are as follows (References 44, 50, and 51):

Parameter	Monthly Average	Daily Maximum
BOD	30 ppm	40 ppm
Suspendable solids	30 ppm	40 ppm
Oil and grease	20 ppm	30 ppm
Total iron	5 ppm	10 ppm
Phenols	0.5 ppm	1 ppm
Settleable solids		0.5 ml/l
pH	6-9	

THDE issued a NOV to the Valve and Fittings Plant on May 2, 1984, for exceeding NPDES permit limits for iron, manganese, pH, and high suspended solids. The NOV was the result of effluent samples taken March 19 and 20, 1984 (Reference 49).

U.S. Pipe holds the following certificates from the Chattanooga-Hamilton County Air Pollution Control Bureau (C-HCAPCB):

SOIL PIPE DIVISION

Certificate	Source
0029-30400350-016	Disamatic Molding Line
0029-30400301-146	Casting Cleaning Unit/Baghouse
0029-30400301-056	Cupolas Baghouse
0029-30400399-066	Shell Core Sand Coating
0029-30400350-076	Shell Reclaiming and Handling
0029-30400350-126	Disamatic-Green Sand System
0029-30400399-136	Silica Flour Bulk System
0029-40200101-146	Paint Dip Tank
0029-30400320-156	5-Foot Pipe Machine
0029-30400320-166	10-Foot Pipe Machine
0029-30400370-176	Shell Core Machines

VALVE AND FITTINGS PLANTS

Certificate	Source
3321-30400202-01	Brass-Bronze Melting and Green Sand Mold Pouring
3321-30400340-02	4 Pedestal Grinders
3321-30400299-03	2 Rotoblast Barrels
3321-30400340-04	Pangborn Abrasive Sandblasting Facility
3321-30400330-05	Shell Molding Machine and Cooling Exhaust System
3321-30400350-07	Shell Sand Mold Pouring Bed
3321-30400001-09	Lead Melting Furnace
3321-30400499-10	Core Oven
3321-30400350-11	Rover Green Sand Preparation System
3321-30400101-12	Binks Water Wash Paint Spray Booth
3321-30400101-13	Binks Water Wash Paint Spray Booth
3321-30400340-15	Pangborn Rotoblast Machine and Rotoblast 8 Feet Table

VALVE AND FITTINGS PLANTS (cont'd)

Certificate	Source
3321-30400340-16	Pangborn 12 Feet Rotoblast Table
3321-30400340-17	4 Grinding Booths
3321-30400340-18	2 Grinding Booths
3321-30400340-19	Swing Frame Grinder
3321-30799999-20	Carpenter Shop Equipment
3321-30799999-21	Pattern Shop Equipment
3321-30400340-25	Cleaning System A
3321-30400340-26	2 Swing Frame Grinders
3321-30400340-27	Cleaning System C
3321-30400340-28	Cleaning System B
3321-30400340-29	Cleaning System D
3321-30400340-30	3 Pangborn Rotoblast Barrels
3321-30400399-31	Unit 4 Mold Line
3321-30400350-34	Booth Pneumatic Sand Transporter
3321-30400350-35	Aerodyne Pneumatic Sand Transporter 1
3321-40200101-37	Binks Water Wash Spray Booth
3321-30400350-38	Aerodyne Pneumatic Sand Transporter 2
3321-30400301-40	Melting Facility

The C-HCAPCB issues the certificates to both facilities based on the following conditions:

1. Limit visible emissions to less than 20 percent opacity;
2. Utilize reasonably available control technology (RACT);
3. Limit visible fugitive emissions from plants to less than five percent opacity;
4. Use no more than 100 tons of Volatile Organic Compounds (VOCs) per year combined for the coating operations. Utilize the best available control technology (BACT) (References 39, 57 and 59).

On September 11, 1985, C-HCAPCB issued a Consent Order and Agreement to the Valve and Fittings Plant in response to chronic emission violations from a Venturi scrubber designed to control emissions on the Unit 9 sand molding and cooling system. The Order and Agreement directed the facility to control emissions and particulate matter from the Unit 9 sand molding and cooling system. The order also outlined a compliance schedule, established test procedures for determining compliance, and established civil penalties.

A previous Order issued April 3, 1985, resulted in modifications to the Former Scrubber (SWMU F-23) but violations continued. U.S. Pipe modified the Ductile Iron Baghouse (SWMU F-22) with additional fans and increased the baghouse air-to-cloth ratio. On December 1, 1986, the facility was in compliance of 20 percent opacity and RACT (References 62, 63, 64 and 65).

On Wednesday, April 13, 1988, Valve and Fittings Plant personnel became aware of a refractory failure in the afterburner section of the Cupola Furnace and opened the cap. This procedure ensured the structural integrity of the furnace. The facility notified C-HCAPCB by telephone and was directed to shut down the furnace and make the necessary repairs. The facility continued to run the cupola with the cap open from 11 a.m. to 6:35 p.m. on Wednesday, and on the following day from 5:45 a.m. until C-HCAPCB issued an NOV at approximately 2 p.m. An Agreed Order was signed on June 6, 1988, stating that U.S. Pipe's Valve and Fittings Plant failed to take reasonable measures to control emissions by operating with the cupola cap open (Reference 58).

On December 7, 1988, the facility submitted information to C-HCAPCB pertaining to a totally enclosed system for disposing cupola baghouse dust. The solidification process involves combining the baghouse dust with cement for eventual disposition at the Landfill (SWMU F-27). The information indicated locating the dust and cement and a batch mixer in the Cupola Baghouse Silo (SWMU F-20) equipped with a Vokes Dalamatic dust filter mounted on the top of the silo. Dust and cement would be transferred to the silo and the mixer pneumatically (Reference 55).

TDHE issued an NOV on May 16, 1985, to the Valve and Fittings Plant for failing to manifest hazardous waste and for storing without a permit. Lead dross skimmed from the facility's lead ladle is stored in drums and transported to R. Lavin and Sons, Chicago, Illinois, for credit towards purchasing brass alloys. TDHE explained that although the dross is reclaimed, a written petition had not been submitted to the Commissioner. The facility responded by submitting a petition to the Commissioner of Tennessee Department of Public Health on May 23, 1985 (Reference 47).

PROCESS DESCRIPTION

United States Pipe and Foundry operates two gray iron foundries in Chattanooga, Tennessee. The Soil Pipe Division manufactures cast iron pipes, utilizing two coke-fired cupola furnaces. The Fittings Plant manufactures ductile iron valve fittings, fire hydrants, and special order castings utilizing one coke-fired cupola. The Valve Plant produces brass and bronze valves, maintains a small lead melting kettle and assembles the fire hydrants (References 39, 47 and 70).

The cast iron products manufactured by the Fittings Plant and the Soil Pipe Division are produced from scrap metal, ferrous silicate, coke, and limestone. The molten metal is transferred to molds at various process lines via transport ladles. Most molds are made of sand and are usually fitted with cores to define the voids desired in the final product. Molten metal is poured into the molds either manually or mechanically and allowed to harden. Once hardened, the sand molds and cores are removed by shake-out machines. Further cleaning is accomplished with shot blast machines before the products are finished with grinding machines (References 6, 39 and 50).

The Valve Plant maintains a bronze foundry for producing brass and bronze valves used primarily for fire hydrants. Brass and bronze are melted in electric furnaces and poured into various molds. Once hardened, the molds are shaken out by hand, shot-blasted, machined and assembled. Molten lead is used to seal the valves into housings (References 59 and 70).

The cupola furnaces are 108 inches in diameter, lined with refractory bricks and continuously cooled by water. The bottom of each is filled with 15 inches of sand to bear the weight of the molten mixture. A crane transports scrap metal, coke, and limestone onto a scale for weighing. Ferrous silicate is added to increase the iron content of the final cast product if the scrap metal used is insufficient. The material is transferred to a feeding bin via a skip hoist. Once the material is in the feeding bin, it is metered into the cupola automatically (References 69 and 70).

The cupolas discharge approximately 20 tons of molten metal per hour into refractory-lined transfer ladles. At the Fittings Plant, transfer ladles transport the molten metal via a specially designed forklift to one of three holding furnaces where a magnesium alloy is added to molten iron. The graphite normally present in cast iron has a thin flake structure. The reaction following the addition of the magnesium alloy causes the graphite to form nodule shapes, producing a stronger iron. The ductile iron is transferred to a pouring ladle. Pouring ladles are then transported to various mold lines. At the Soil Pipe Division, the molten metal is transferred directly to a mold line via an overhead monorail system (References 10 and 25a).

The Fittings Plant has three process lines: Unit 9, Unit 4, and Unit 10. Unit 9 produces 16-inch and smaller pipe fittings in a continuously automated molding line. Unit 4 is a semi-automated process line and Unit 10 is a low production area devoted to processing very large fittings or specialty items (References 6, 59 and 70).

The Soil Pipe Division maintains three process lines: the disamatic line, the five-foot pipeline and the 10-foot pipeline. The disamatic line is the Division's most productive process, manufacturing small pipes and pipe fittings. The five- and ten-foot pipelines produce pipes which have permanent molds. A silica flour bentonite mixture is the release agent used to free the newly cast pipe from the mold (Reference 39). The permanent molds are coated with the mixture before molten metal is forced into the mold. The pipes are formed as the mold is spun (Reference 70).

All three facilities utilize sand and cores for producing various shaped pipes and fittings. The predominant sand mixture for molding is green sand. Green sand is composed of, on a dry basis, 99 percent silicon dioxide and one percent sea coal (bituminous coal and styrene butadiene), bentonite, and wood flour. Heated green sand is transferred to Mueller where it is mixed with flake resin, hexamethylene tetramine, iron oxide, wax and water. Another sand mixture utilized by the Valve and Fittings Plant consists of 98 percent sand, 1.5 percent phenol-formaldehyde (no bake resin), and 0.5 percent benzene sulfonic acid. Shell cores utilized by the Fittings Plant and the Soil Pipe Division consist of 91 percent sand, three percent phenol-formaldehyde resin, 0.2 percent iron oxide, one percent calcium stearate and calcium soap of stearic acid plus 0.85 percent hexamethylene-tetramine. Some shell cores are coated with a mixture of graphite and clay (blacking). Isocure cores utilized by the Valve and Fittings Plant are 98 percent sand with the remaining two percent comprised of a 55 percent to 45 percent mixture of phenolic resins and polymeric isocyanate, respectively. This mixture employs the catalyst gas triethylamine (TEA) (References 6, 41 and 70).

Shake out is the process of separating the newly cast pipe from the mold and cores. Some sand remains on the newly cast pipe following shake out. The remaining sand is removed by shot-blast machines utilizing steel shot fired at high velocities. Various grinding machines remove burrs and unwanted cast usually found along the seams of the products (References 6, 59 and 70).

The coating operations consist of dipping or spray painting the pipes, hydrants, and fittings. At the Fittings and Valve Plants, asphalt enamel (containing xylene and toluene) paint is mixed with 1,1,1-trichloroethane for most of the coating operations. The Soil Pipe Division utilizes an asphalt/naphtha mixture. The Fitting Plant utilizes cement to line the interior diameter of various pipe fittings (References 39 and 70).

WASTE MANAGEMENT

In this section, waste streams at the Fittings Plant, Valve Plant and Soil Pipe Division are discussed separately. Refer to the Flow Diagram of Waste Management at the Fittings Plant (Figure II-2), Valve Plant (Figure II-3) and the Soil Pipe Division (Figure II-4).

Fittings Plant

The Fittings Plant maintains one cupola furnace located in the south section of the facility, adjacent to a railroad spur. Limestone, coke, and shredded auto bodies (frag) are received in this area. The Frag Pile (SWMU F-1) is

Figure II-2. Flow Diagram Of Waste Management At The Fittings Plant (Reference 70)

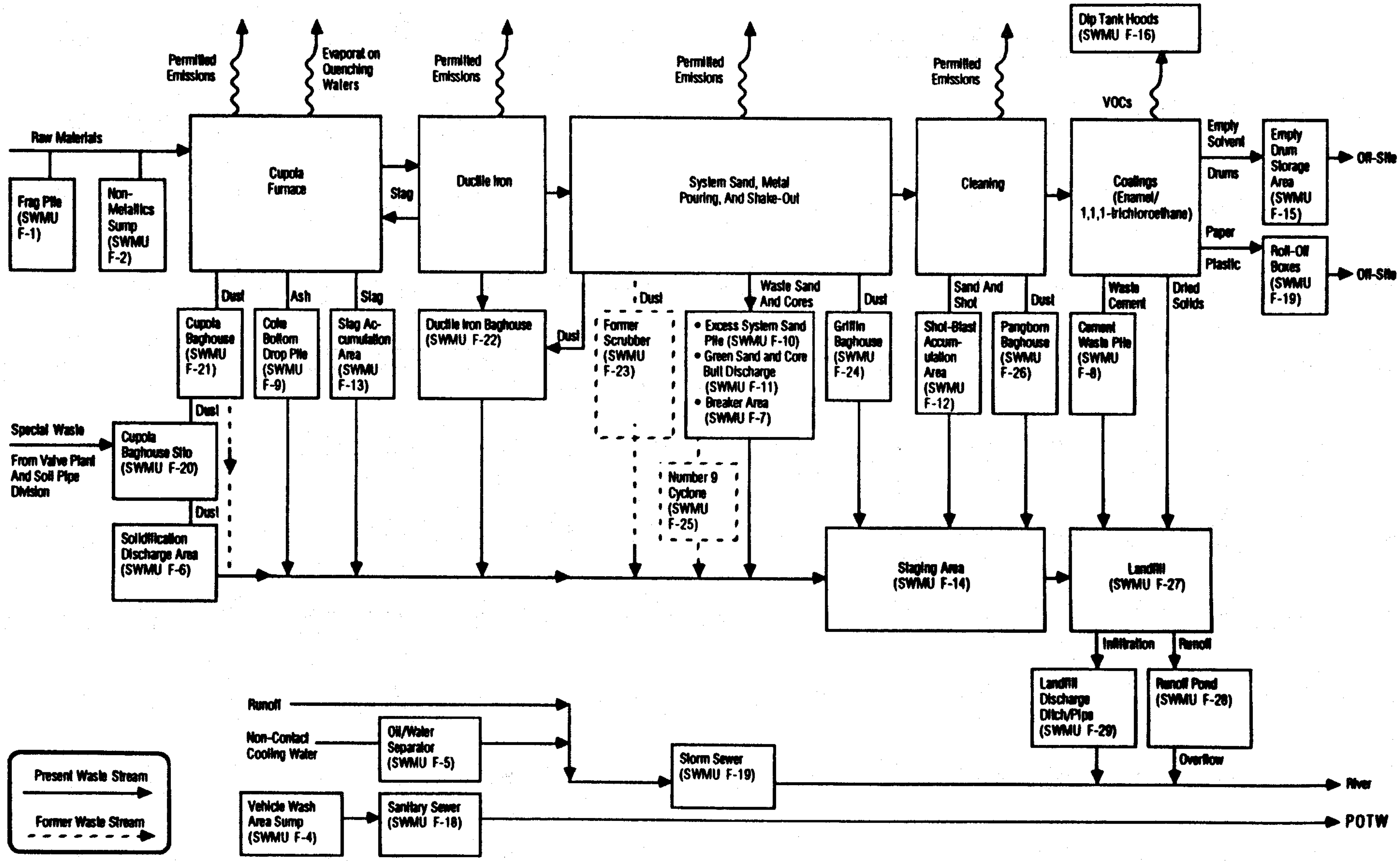


Figure II-3. Flow Diagram of Waste Management at the Valve Plant (Reference 70)

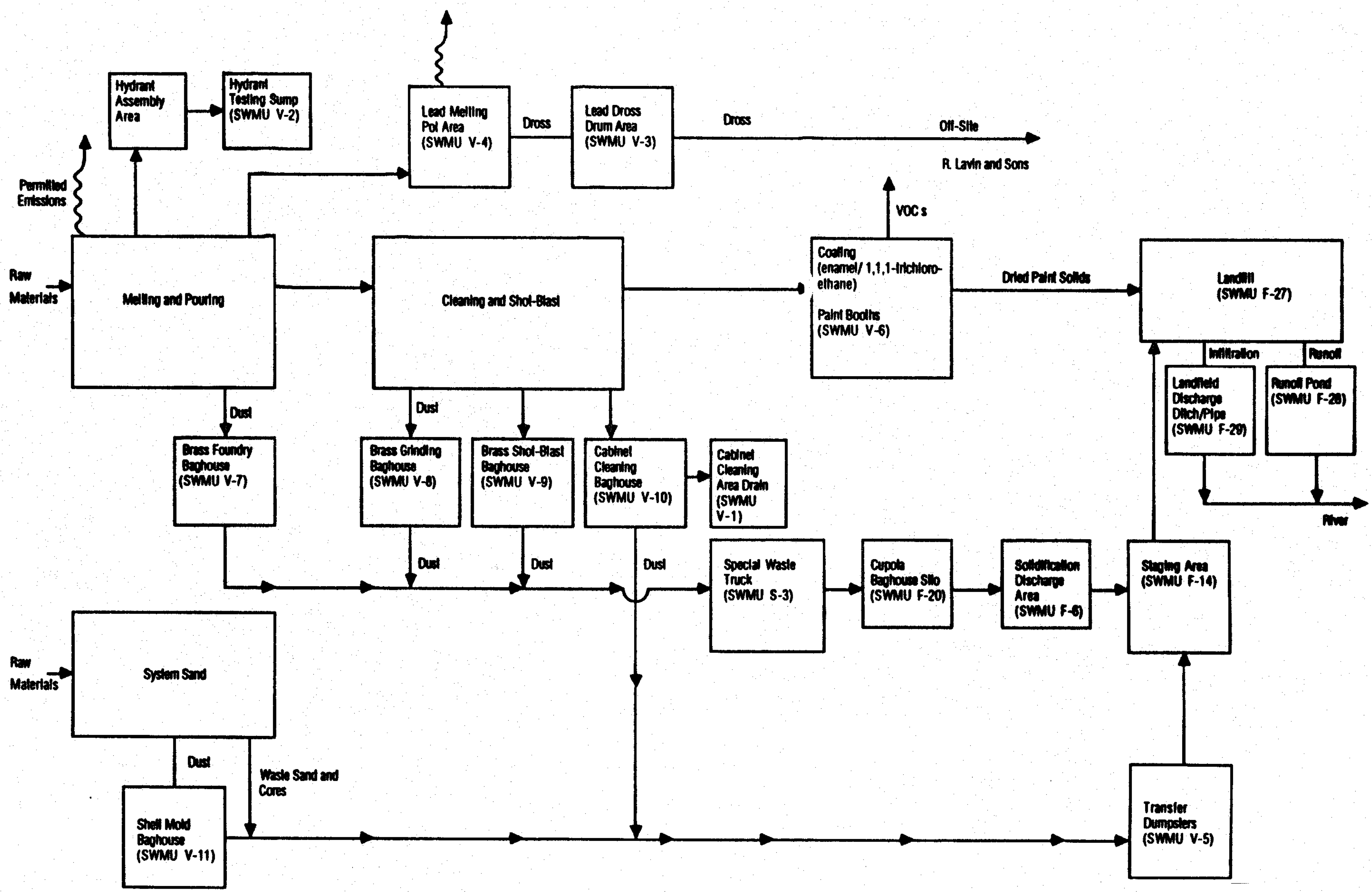
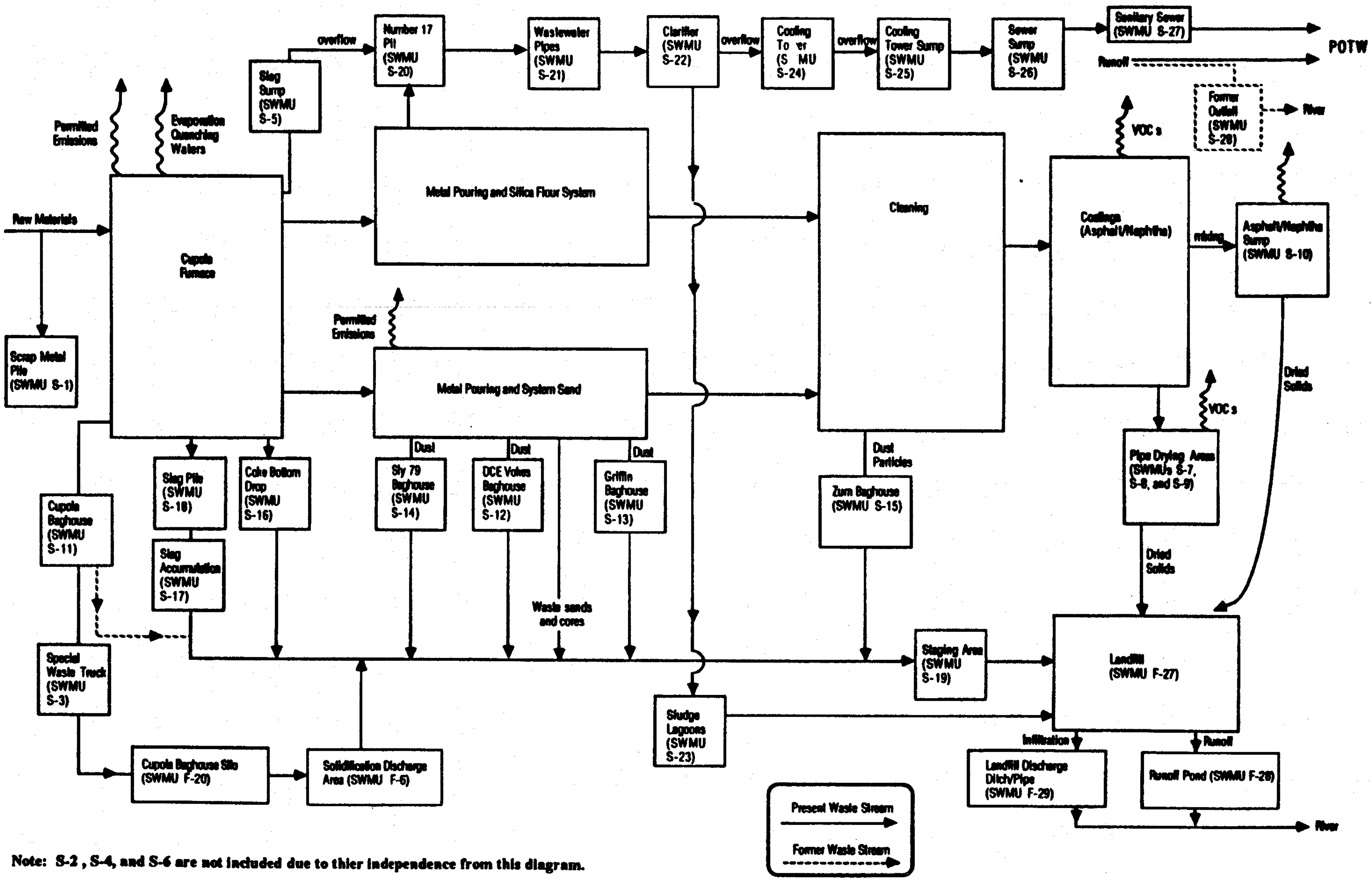


Figure II-4. Flow Diagram Of Waste Management At The Soil Pipe Division (Reference 70)



Note: S-2 , S-4, and S-6 are not included due to thier independence from this diagram.

located within reach of a locomotive equipped with a crane. Limestone and coke are unloaded from railcars into a hopper. Precipitation collecting in this hopper is collected by the Non-Metallics Sump (SWMU F-2) (Reference 70).

The cupola furnace generates the following wastes: cupola baghouse dust, slag, unburned coke and ash, and waste refractories (References 6 and 70). Cupola baghouse dust is collected by the Cupola Baghouse (SWMU F-21). A negative pressure draft from the cupola furnace materials feeding bin is ducted to the Cupola Baghouse (SWMU F-21). Prior to entering the unit, gases from the furnace are ducted into a heat exchanger and cooling tower. Hot air from the heat exchanger is rerouted to the furnace. The cooling water is evaporated during gas quenching (Reference 70).

The cooling process reduces the temperature of the gases to approximately 500 degrees Fahrenheit. The Cupola Baghouse (SWMU F-21) consists of 21 compartments with 60 fiberglass bags per compartment. The cooled gases flow through the bags, which trap the cupola baghouse dust. A system of shakers free the dust particles from the bags. The dust falls into the hoppers located at the base of each compartment. The compartments discharge to a screw conveyor. The screw conveyor discharges to a pneumatic pipe system designed to transfer the dust to the Cupola Baghouse Silo (SWMU F-20). Prior to October 1988, the baghouse dust (EP toxic for lead and cadmium) was mixed with waste foundry sands and disposed of at the on-site Landfill (SWMU F-27). As of October 1988, the baghouse dust is mixed with the following materials:

Material	Quantity
baghouse dust	1,000 pounds
cement	655 pounds
water	62 gallons
sodium silicate	8 gallons

The combined materials are discharged to the Solidification Discharge Area (SWMU F-6) until disposal at the Landfill (SWMU F-27) (Reference 70).

Slag floats on the surface of the flowing molten metal as it is discharged from the cupola furnace. A small dam diverts the top flow (slag) from the bottom flow (molten metal). The slag is quenched with water which fritters the slag into a glass-like consistency. The remaining quenching waters are collected by the Slag Sump (SWMU F-3) for recirculation. The slag falls onto the Slag Accumulation Area (SWMU F-13). The slag is then transferred to the Staging Area (SWMU F-14) prior to disposal at the Landfill (SWMU F-27) (Reference 70).

Each weekend, the cupola furnace is cleaned out and the refactory wall is repaired and prepared for recharging. Unburned coke, sand, ash and broken refractory bricks are discharged to the Coke Bottom Drop Pile (SWMU F-9) (Reference 70).

The Fittings Plant recycles as much system sand (green sand and core sand) as possible. The Green Sand and Core Butt Discharge (SWMU F-11) waste pile consists of green sand contaminated with core sand. The contamination is the result of repeated shake out operations. The Breaker Waste Pile (SWMU F-7) also receives broken cores and excess system sand from the large castings operations. Large cores from the Breaker Waste Pile (SWMU F-7) are salvaged and returned to the core-making machines. Sand and small fragments of steel shot from the shot-blast operations are collected in the Shot-Blast Accumulation Area (SWMU F-12). All sand wastes are transported to the Staging Area (SWMU F-14). Waste foundry sands are mixed with slag, excess system sand from the Excess System Sand Pile (SWMU F-10), and other baghouse dusts for disposal at the Landfill (SWMU F-27) (References 6 and 70).

The Fittings Plant maintains the following active air emission control units: the Ductile Iron Baghouse (SWMU F-22), the Griffin Baghouse (SWMU F-24) and the Pangborn Baghouse (SWMU F-26). The Former Scrubber (SWMU F-23) previously managed dust and emissions from Unit 9 mold pouring and shake out. This unit was dismantled in 1985. Emissions from Unit 9 were rerouted to the Ductile Iron Baghouse (SWMU F-22). The capacity of the Ductile Iron Baghouse (SWMU F-22) was increased by 50 percent to manage the additional waste. This unit also controls emissions generated from the ductile iron operations. Approximately 3.3 pounds of dust is generated per ton of ductile iron produced. Dust from the ductile iron operations consists primarily of magnesium oxide (References 6 and 70). The Griffin Baghouse (SWMU F-24) controls emissions from the green sand reclaiming system. The Pangborn Baghouse (SWMU F-26) controls emissions from the shot blast and grinding operations. The Number 9 Cyclone (SWMU F-25) previously controlled emissions from the green sand system. The facility is converting the unit to a cooling system (References 6 and 70). The baghouse wastes are collected in hoppers at the base of each unit and transferred to the Staging Area (SWMU F-14) prior to Landfill (SWMU F-27) disposal. Emissions in the large casting areas are uncontrolled. Ductile iron slag contains 70 percent iron and is discharged to the Breaker Waste Pile (SWMU F-7). An electromagnet recovers the iron for remelting. The remaining waste is transferred to the Staging Area (SWMU F-14) for mixing prior to Landfill (SWMU F-27) disposal (Reference 70).

The Landfill (SWMU F-27) has been active since 1956 and has received predominantly waste foundry sands (Reference 71). System sand represents 77.5 percent of the foundry waste generated by all three plants. System sand includes green sand; core sand; airset and pepset cores; and isocure cores (References 70 and 71). Green sand is 99 percent silicon dioxide with the remaining one percent comprised of seacoal (a mixture of bituminous coal and styrene butadiene), bentonite and wood flour (pulverized cellulose and lignin) (Reference 6). Core sand is 91 percent silicon dioxide, 3 percent phenol-formaldehyde resin, 0.85 percent hexamethylene-tetramine (HEXA), 0.2 percent iron oxide, and 0.2 percent calcium searate. The remainder is water (Reference 6). The Valve and Fittings Plants utilize isocure, airset and pepset cores (Reference 6). Airset and pepset cores are 98 percent silicon dioxide, 1.5 percent phenol and 0.5 percent benzene sulfonic acid (Reference 6). Isocure cores are 98 percent silicon dioxide with the remaining 2 percent comprised of 55 percent phenolic resin and 45 percent polymeric isocyanate catalyst triethylamine (TEA). TDHE has determined this material is a Special Waste. Isocure sand and core butts represent 1.5 percent of the waste received by the Landfill (SWMU F-27) (References 6 and 71).

Fifteen percent of the foundry waste is slag including desulfurized ladle slag from the ductile iron operations (References 6 and 71). Slag is 48.5 percent silicon dioxide, 24.4 percent calcium oxide, 16 percent aluminum oxide and 3.2 percent iron oxide. The remainder is composed of magnesium oxide, manganese and sulfur (Reference 6). Desulfurized ladle slag is 70 percent cast iron, 7 percent calcium sulfide, 19 percent calcium oxide and 4 percent calcium carbide. The iron is reclaimed for remelting (References 6 and 70).

Sludge generated by the Soil Pipe Division's silica flour release system represents 1.2 percent of the Landfill (SWMU F-27) waste. The silicon flour/bentonite sludge is 93 percent silicon dioxide flour and 7 percent bentonite. Acetic acid extraction analysis for the sludge indicates concentrations of 0.2 ppm lead, 0.13 ppm arsenic, 0.17 ppm barium, 0.1 ppm cadmium and 0.11 ppm chromium (References 6 and 27).

Cupola Baghouse (SWMU F-21) dust represents 1.5 percent of the Landfill (SWMU F-27) waste. EP toxicity data for the cupola baghouse dust indicates 37 ppm lead, 1.6 ppm cadmium and 0.48 ppm barium. Samples collected from the Landfill (SWMU F-27) indicate 7.7 ppm lead, 1.3 ppm cadmium and 0.22 ppm barium (References 5, 6 and 71).

Baghouse dust from the brass melting and grinding operation makes up 0.1 percent of the waste managed by the Landfill (SWMU F-27). Analysis of the dust from the melting operations indicates concentrations of 2.5 ppm lead, and analysis of the dust from the brass grinding operations indicates a concentration of 3.1 ppm (References 2, 6 and 71).

Two percent of the Landfill (SWMU F-27) waste is broken refractory linings from the cupola furnaces and ladles. Refractories consist of 17 to 95 percent aluminum oxide, 25 to 54 percent silicon dioxide, 0 to 0.6 percent calcium dioxide, 0 to 35 percent carbon, 0 to 35 percent zircon oxide and traces of iron oxide and magnesium oxide (Reference 6).

Less than 0.5 percent each of the following wastes are also disposed of at the Landfill (SWMU F-27): unburned coke, Ductile Iron Baghouse (SWMU F-22) dust, cement lining waste, dried paint waste (asphalt and enamel paints) and grinding and shot-blast waste (Reference 6).

Two ground-water monitoring wells have been installed at the Landfill (SWMU F-27), one upgradient and one downgradient. The wells were installed during 1985. Twenty-one ppm iron and 0.01 ppm lead were detected in samples taken December 9, 1985. Samples taken October 27, 1987, detected 15 ppm iron and 0.14 ppm lead (Reference 71).

The Landfill Discharge Ditch/Pipe (SWMU F-29) receives overflow from a City of Chattanooga regulator chamber. During periods of wet weather, overflow from the regulator discharges to a native soil ditch located east of the Landfill (SWMU F-27). The ditch discharges to a 72-inch corrugated metal pipe (CMP). The CMP is buried beneath the Landfill (SWMU F-27) and ultimately discharges to the Tennessee River. According to the Foundry Landfill Operations Manual prepared by U.S. Pipe Consultants (EDGE), rainfall infiltrating the Landfill discharges to the CMP. Analysis of the discharge from samples taken March 26, 1987, and October 27, 1987, indicates 1.1 ppm iron, 0.012 ppm lead, and 2.1 ppm iron, 0.06 ppm lead, respectively (References 7, 15, and 71).

Runoff from the Landfill (SWMU F-27) is collected by the Runoff Pond (SWMU F-28). The unit is an unlined pond with a rock-lined ditch. Overflow from this unit discharges to the Tennessee River (References 70 and 71).

The Storm Sewer (SWMU F-17) discharges runoff and non-contact cooling water to the Tennessee River via outfalls 001 and 002. Approximately 48,000 gallons per day of non-contact shell core machine cooling water is discharged to outfall 002, and approximately 64,000 gallons per day of non-contact hydraulic heat exchange cooling water is discharged to outfall 001. The cooling water discharging to outfall 001 is treated by the Oil/Water Separator (SWMU F-5) (References 53, 54 and 70).

The Sanitary Sewer (SWMU F-18) receives approximately 105,000 gallons of water per day from the Fittings Plant sanitary facilities. Other waste received by this unit includes the contents of the Vehicle Wash Area Sump (SWMU F-4) consisting of wash water, oil, grease and detergent. The sump is equipped with an oil skimmer. However, the VSI team observed the sump was not filled to the correct level to facilitate proper oil skimming (Reference 70).

The Fittings Plant consumes 305,000 gallons of water per day. Approximately 112,000 gallons discharge to the Tennessee River, 105,000 gallons discharge to the POTW and 88,000 gallons evaporate per day (Reference 54).

The coatings operation at the Fittings Plant utilizes an enamel paint diluted with 1,1,1-trichloroethane. Large-diameter fittings are spray painted and smaller-diameter fittings are dipped in dip tanks. Emissions in this area are directed to the atmosphere via the Dip Tank Hoods (SWMU F-16). Paint is received by the facility in 300-gallon containers. The dip tanks are filled by connecting the paint tank to an inlet on the paint container which discharges to the dip tanks. Approximately five feet from the inlet to the paint tanks is a doorway. Paint-contaminated mixing sticks stored in this area drip onto the alley outside the building. There was drippage on the door step and in the alley. Both areas of staining are referred to as the Coating Area (AOC F-H). Paint drippage on the coating area is collected on cardboard or plastic, then disposed of in the Roll-off Boxes (SWMU F-19). Empty paint containers and 1,1,1-trichloroethane drums are transported to the Empty Drum Storage Area (SWMU F-15). The coatings operation also lines pipe fittings with cement. Waste cement accumulates at the Cement Waste Pile (SWMU F-8) prior to disposal at the Landfill (SWMU F-27) (References 57 and 70).

Valve Plant

The Valve Plant is a brass foundry and fire hydrant assembly plant. Brass ingots are melted in electric induction areas, and the molten brass is poured into various molds. Emissions from the brass foundry operations are controlled by the Brass Foundry Baghouse (SWMU V-7). Emissions from the mold making process are controlled by the Shell Mold Baghouse (SWMU V-11). Emissions from the brass grinding and brass shot-blast operations are controlled by the Brass Grinding Baghouse (SWMU V-8) and the Brass Shot-Blast Baghouse (SWMU V-9), respectively (References 6 and 70). Except for the shell mold waste, dust collected by the baghouses above is transferred to the Fittings Plant for treatment via the Special Waste Truck (SWMU S-3). Particulates collected by the Shell Mold Baghouse (SWMU V-11) are transferred to the Waste Area located on the west side of the facility. Broken cores and excess molding sand are transferred to the Transfer Dumpsters (SWMU V-5) via front-end loaders. Trucks transport the Transfer Dumpsters to the Fittings Plant Staging Area (SWMU F-14) (Reference 70).

The cast iron housings and pipes for fire hydrants are manufactured at the Fittings Plant. The castings are shot blasted and ground to specification prior to assembly. Emissions from these operations are controlled by the Cabinet Cleaning Baghouse (SWMU V-10). Runoff in the cabinet cleaning area is collected by the Cabinet Cleaning Area Drain (SWMU V-1). The precipitation collected by this unit evaporates (Reference 70).

The brass castings are machined and assembled into various valves and fittings. Many of the valves are assembled onto the fire hydrant housings. The valves are sealed into the cast iron housings with molten lead. Emissions from the lead melting pot are vented to the atmosphere, and spillage is scraped off the floor and remelted. Lead dross is skimmed off the surface of the pot and discharged to a drum. Lead dross contains 38 ppm lead. The drums are stored in the Lead Dross Drum Area (SWMU V-3). U.S. Pipe exchanges the lead dross with R. Lavin and Sons, Chicago, Illinois, for credit toward purchasing brass ingots (References 47 and 70).

When the fire hydrants are assembled, each hydrant is integrity tested with water. Water utilized for integrity testing the hydrants is collected by the Hydrant Testing Sump (SWMU V-2). The water is recirculated (Reference 70).

The Valve Plant maintains two waterfall curtain Paint Booths (SWMU V-6) for spray painting operations. Excess atomized spray paint is drawn to the water falling behind the products during spraying operations. Excess paint collects in the reservoir beneath the falling water. Paint waste accumulates on the surface. The surface is periodically skimmed. Excess paint waste is disposed of at the Landfill (SWMU F-27) (Reference 70).

The VSI team observed black oily stains on the asphalt in the vicinity of a compressor shed. The stained area was approximately 25 square feet. At the time of the VSI, the alley adjacent to the stained area was used to store crates of machined parts covered with a light oil. This area has been designated as an area of concern and referred to as the Compressor Area (AOC V-B). Facility representatives could not provide information regarding the source of the staining (Reference 70).

Soil Pipe Division

The Soil Pipe Division maintains two cupola furnaces located in the northeast section of the facility. An overhead crane manages the Scrap Metal Pile (SWMU S-1) located at various locations within the craneway (Reference 70).

The cupola furnaces generate the following wastes: cupola baghouse dust, slag, unburned coke and ash, and waste refractories (References 6 and 7). Cupola baghouse dust is collected by the Soil Pipe Cupola Baghouse (SWMU S-11). A negative pressure draft from the cupola furnace feeding bin is ducted to the Soil Pipe Cupola Baghouse (SWMU S-11). Prior to entering the unit, gases from the furnace are vented into a heat exchanger and cooling tower. Hot air from the heat exchanger is recirculated back to the furnace. The cooling water is evaporated during gas quenching. The cooling process reduces the temperature of the gases to approximately 500 degrees Fahrenheit. The Soil Pipe Cupola Baghouse consists of 21 compartments with 60 fiberglass bags per compartment. The cooled gases flow through the bags which trap the cupola baghouse dust. A system of shakers free the dust particles from the bags. The dust falls into the hoppers located at the base of each compartment. The compartments discharge into a screw conveyor. The screw conveyor discharges the dust into the Special Waste Truck (SWMU S-3) which transfers the waste to the Fittings Plant Cupola Baghouse Silo (SWMU F-20) (References 37, 42 and 70). Slag floats on the surface of the molten metal as it is discharged from the cupola furnace. A small dam diverts the top flow (slag) from the bottom flow (molten metal). The slag is quenched with water which fritters the slag into a glass-like consistency. The remaining quenching waters are collected by the Slag Sump (SWMU S-5). The slag falls onto the Slag Pile (SWMU S-18) and is transferred to the Slag Accumulation Area (SWMU S-17) prior to disposal at the Landfill (SWMU F-27) (References 6 and 70).

The cupola furnaces alternate weeks of operation. When a furnace is not operating, it is cleaned and repaired. Unburned coke, sand and ash are discharged to the common Coke Bottom Drop Pile (SWMU S-16). Broken refractory bricks are discharged to the unit, as well (References 6 and 70).

The disamatic pipeline is the only pipeline utilizing system and core sand. The disamatic line recycles the green sand. Emissions from this area as well as disamatic pouring and shake out are controlled by the Soil Pipe Griffin Baghouse (SWMU S-13). Emissions generated during green sand preparation are controlled by the DCE Vokes Baghouse (SWMU S-12). Contaminated sand, baghouse sand and broken cores are stored at the Soil Pipe Staging Area (SWMU S-19). After mixing at the staging area, foundry wastes are mixed and disposed of at the Landfill (SWMU F-27) (References 6 and 70).

Baghouse dust from the Sly 79 Baghouse (SWMU S-14) and the Zurn Baghouse (SWMU S-15) is also transferred to the Soil Pipe Staging Area (SWMU S-19). The wastes collected by these units are emissions from the core making machines and from the shot-blast/grinding operations, respectively (References 6, 34 and 70).

The Soil Pipe Division utilizes permanent molds. The molds are spinning molds which are cylinders hollowed out to various diameters. A silica flour/bentonite slurry is poured over the mold before molten metal is poured. The mold spins, thereby forming a pipe inside the mold. Excess slurry water from the various spinning mold lines is collected by the Number 17 Pit

2-9-89 mst
2 D O 2/10
~~Central Files~~ Permitting Files
File # 33-138

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

RECEIVED
FEB 8 1989
DIV. OF SWM

January 16, 1989

Mr. John Watson
U.S. Pipe and Foundry Co.
General Office
3300 First Avenue North
Birmingham, AL 35202

Dear Mr. Watson:

The Environmental Protection Agency (EPA) Region IV is conducting a RCRA Facility Assessment (RFA) of the U.S. Pipe and Foundry Company - Soil Pipe Division and Valve Fitting Plant facilities in Chattanooga, Tennessee. The 1984 Hazardous and Solid Waste Amendments (HSWA) provide EPA authority under RCRA to require comprehensive corrective actions on releases of hazardous constituents to air, surface water, ground water and soil at facilities that manage hazardous waste.

The RFA includes a desk-top review of RCRA, CERCLA, Air, and Water files at the Regional and State offices, a visual site inspection (VSI) of the facility, and if necessary, a sampling visit. The VSI for the U.S. Pipe facility is scheduled for January 23 and 24, 1989. The VSI will be scheduled for two days but may, if necessary, run longer. The VSI will be conducted by representatives of A.T. Kearney, Inc., under EPA Contract No. 68-01-7038. The objectives of the VSI are to identify all Solid Waste Management Units and other areas of concern at the facility and to evaluate the potential for past or ongoing releases of hazardous constituents from each unit.

Included in Attachment A is a proposed schedule for the site inspection and a preliminary list of potential Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) which have been identified from the available file material. Attachment B presents a summary of information needs for the facility. The facility should be prepared to provide this information, if possible, to the field team at the time of the VSI.

Please note that the photographs of the facility, SWMUs and AOCs will be taken during the VSI. In preparation for the VSI, the contractor is required to identify any potentially hazardous conditions likely to be encountered at the site during performance of the VSI and to prepare a safety plan that deals with the anticipated hazards. The contractor will contact you by telephone in the near future to obtain specific information on the level(s) of personal protection required and materials handled in each area of your facility.

The following individuals from the Kearney/Centaur Division of A.T. Kearney, Inc., will conduct the VSI:

Phebe Davol
Jeff Evans

The field team will be accompanied by representatives of EPA Region IV and the Tennessee Department of Health and Environment (TDHE):

Alicia Thomas, EPA Region IV, Technical Monitor
Jim Childress, TDHE

Your cooperation in assisting the contractors and representatives while on site is appreciated. Should you have any questions regarding this letter, please contact Alicia Thomas of my staff at 404/347-7603.

Sincerely yours,

James H. Scarbrough

James H. Scarbrough, P.E.
Chief RCRA Branch
Waste Management Division

Enclosures

cc: A. Thomas, EPA Region IV
J. Childress, TDHE
P. Davol, A.T. Kearney, Inc.
J. Book

ATTACHMENT A

PROPOSED RCRA VISUAL SITE INSPECTION AGENDA

Facility: U.S. Pipe and Foundry
P. O. Box 6129
1000 West 19th Street
Chattanooga, Tennessee 37401

Soil Pipe Division and
Valve Fittings Plant
P. O. Box 311
2701 Chestnut Street
Chattanooga, Tennessee 37401

EPA ID No: Soil Pipe Division TND 074893777
Valve Fittings Plant TND 980316301

Facility Contact:

John Watson
U.S. Pipe and Foundry Company
General Office
3300 First Ave. North
Birmingham, AL 35202
(205) 254-7434

Jim Book
U.S. Pipe and Foundry
Valve and Fittings Plant
P.O. Box 311
Chattanooga, TN 37401
(615) 265-4611

Date of Inspection: January 23 and 24, 1989

Personnel Making Inspection:

Phebe Davol	A. T. Kearney, Inc.	703/683-7932
Jeff Evans	A. T. Kearney, Inc.	703/683-7932
Alicia Thomas	U.S. EPA Region IV	404/347-7603
Jim Childress	TDHE	615/624-9921

PURPOSE OF VISUAL SITE INSPECTION:

The Hazardous and Solid Waste Amendments (HSWA) of 1984 broaden EPA's authority under RCRA to require corrective action for releases of hazardous wastes and solid wastes containing hazardous constituents at facilities that manage hazardous wastes. The corrective action authority extends to all solid waste management units (SWMUs) at the facility. The first phase of the corrective action program as established by EPA is performance of a RCRA Facility Assessment (RFA). The RFA includes a preliminary review of available file information, a visual site inspection (VSI) of the facility, and, if necessary, a sampling visit. A preliminary review of file material has been performed for this facility, and a VSI has been determined to be necessary. The purposes of the VSI are:

1. To collect all available, relevant information on solid waste management practices that have been used on the site;

2. To gain first-hand information as to the identification, location, construction, configuration, function served, method of operation, and condition of each SWMU;

3. To confirm, by visual inspection, information collected during the file review;

4. To survey the site for additional SWMUs and other areas of concern not identified in the review of file material;

5. To identify potential sample points for possible future sampling activities;

6. To review the site information and collect additional information to address the information needs identified during the file review; and,

7. To take photographs of all SWMUs and other areas of concern.

INSPECTION PLAN

A. T. Kearney personnel will form a two-member team accompanied by State and EPA Regional representatives to perform a two-day inspection. The team will inspect waste generation areas in production facilities, as well as waste handling, storage, treatment, and disposal areas on site. The team will also inspect potential pathways for release of wastes into the environment. Facility staff will be interviewed to develop a better understanding of past and present waste management practices. Any available environmental monitoring or sampling data for characterization of the soils, groundwater, surface water (or runoff), and air quality of the site, also will be reviewed.

INSPECTION SCHEDULE

The schedule which follows has been prepared based on the file review and is intended to allow a visual inspection of all SWMUs and other areas of concern on the site. The schedule may be adjusted as necessary at the time of the visit to accommodate unforeseen conditions.

The overall rationale of this inspection plan is to enable the team to inspect the entire facility. Some adjustments to the agenda may be necessary and can be made when on site to accommodate facility staff, geographical locations of units, and/or operational constraints.

U.S. Pipe and Foundry.
Soil Pipe Division and
Valve Fittings Plant
Chattanooga, Tennessee
Proposed RCRA Visual Site Inspection Agenda

Time	Activity
January 23, 1989	Soil Pipe Division and Landfill
9:00 a.m.	Introductory meeting with facility representatives to discuss agenda, and safety and health considerations.
9:30 a.m.	Review additional information needs pertaining to solid waste management units identified during the file review including discussions of past and present production processes which generate waste streams.
10:00 a.m. - 12:00 noon	Tour and explanation of facility/processes which may generate waste streams. Begin site inspection at the point where raw product is received by the facility.
12:00 noon - 1:00 p.m.	Lunch
1:00 p.m. - 5:00 p.m.	Tour site perimeter and any waste handling areas not previously identified.
January 24, 1989 - Valve and Fitting Plant	
9:00 a.m. - 12:00 p.m.	Continue with tour of facility/processes which may generate waste streams.
12:00 p.m. - 1:00 p.m.	Lunch
1:00 p.m. - 3:00 p.m.	Tour site perimeter and any waste handling areas not previously identified.
3:00 p.m. - 4:30 p.m.	Closing meeting with facility contacts. Discuss information needs still outstanding or generated during the VSI.

U.S. Pipe and Foundry.
Soil Pipe Division and
Valve Fittings Plant
Chattanooga, Tennessee
Proposed RCRA Visual Site Inspection Agenda

The following list of potential SWMUs is based on information gathered during a desk-top review of U.S. EPA Region IV and State of Tennessee file material. If any of the units listed no longer exists, the locations of the former units should be identified by facility representatives during the VSI. Likewise, units defined as areas where solid wastes, both hazardous and non-hazardous, are treated, stored or disposed; and units where raw material is stored; and units where product material is stored, handled, and transferred, should be identified by facility representatives during the VSI.

PRELIMINARY LIST OF SWMUs NOTED DURING FILE REVIEW

Soil Pipe Division

1. Landfill
2. Landfill Discharge Pipe
3. Former Outfall
4. Tar Storage Areas
5. Tar Dipping Tank Trench and Sump
6. Paint Waste Accumulation Area
7. Paint Drip Collector
8. Paint Waste Accumulation Area
9. Phenol and Formaldehyde Accumulation Area
10. Phenol and Formaldehyde Mixing Area - Muller
11. Phenol and Formaldehyde Mixing Area - Core Machines
12. Corregated Pipe Beneath Landfill
13. Wastewater Treatment System
14. Sludge Drying Beds
15. Sludge Roll-Off Box
16. Cupola Baghouse
17. Cupola Baghouse Hoppers 1-15
18. Cupola Baghouse Dust Conveyor
19. Cupola Baghouse Dust Truck Loading Area
20. Cupola Baghouse Dust Silo
21. Cupola Baghouse Dump Trucks

U.S. Pipe and Foundry.
Soil Pipe Division and
Valve Fittings Plant
Chattanooga, Tennessee
Proposed RCRA Visual Site Inspection Agenda

<u>Soil Pipe Division</u> (cont'd)

22. Cupola Baghouse Dust Processor
23. Industrial Sweepers
24. Sanitary Sewer
25. Waste Core Pile
26. Slag Pond Overflow
27. Scrap Metal Pile

PRELIMINARY LIST OF AOCs NOTED DURING FILE REVIEW

A. Pig Iron Storage Area

U.S. Pipe and Foundry.
Soil Pipe Division and
Valve Fittings Plant
Chattanooga, Tennessee
Proposed RCRA Visual Site Inspection Agenda

PRELIMINARY LIST OF SWMUs NOTED DURING FILE REVIEW

Valve and Fittings Plant

1. Brass Grinding Collection Area
2. Ductite Iron Baghouse
3. Ductite Iron Baghouse Conveyor
4. Sanitary Sewer
5. Storm Sewer
6. Outfall 001
7. Oil Skimmer Outfall 001
8. Outfall 002
9. Paint Drip Collector
10. Paint Waste Accumulation Area
11. Spray Booths
12. Slag Water Sump
13. Cupola Baghouse
14. Cupola Baghouse Hoppers
15. Cupola Baghouse Conveyor
16. Cupola Baghouse Dust Truck Loading Area
17. Cupola Baghouse Dust Silo
18. Cupola Baghouse Dust Processor
19. Slat Water Sump
20. Phenolic Resin, Cold Box Resin and Catalyst Accumulation Area
21. Lead Dross Accumulation Area
22. Lead Dross Drum Storage Area
23. DCE Voles Baghouse
24. Griffin Baghouse
25. Apron Conveyor Baghouse
26. Wet Collector
27. Sly 79 Baghouse
28. Zurn Baghouse

PRELIMINARY LIST OF SWMUs NOTED DURING FILE REVIEW

Valve and Fittings Plant (cont'd)

29. Cleaning Shed Rotoclones
30. Grinder Booth Baghouse
31. Stacks
32. #9 Unit Cyclone
33. #2 Drip Painting Line
34. Pangborn Blast Cleaner Baghouse
35. Binks Water Wash Booth

PRELIMINARY LIST OF AOCs NOTED DURING FILE REVIEW

A. Brass Alloy Storage Area
B. Lead Ingot Storage Area

ATTACHMENT B

LIST OF ADDITIONAL INFORMATION NEEDS

U.S. Pipe and Foundry
Chattanooga, Tennessee

I. General Facility Information Needs

Unless information needs are designated by (SP) Soil Pipe Division or (VF) Valve and Fitting Plant, the information requested shall refer to by both facilities.

1. Recent facility map showing site boundaries indicating locations of solid waste management units identified during the file review and listed on the preceding page.

2. Identification of past of present solid waste management units which have not been previously identified in the proposed VSI agenda. Include a brief description of wastes managed in these units and the period of operation. These include:

    - Former waste holding, storage and treatment areas.

    - All waste and product transfer areas, and associated activities including loading zones and waste accumulation areas.

3. Provide information regarding ownership status, and a history of the facility.

4. Provide construction or design plans, and current status of the Landfill (SP).

5. Provide inventory of all paints, coatings, and solvents used, and disposition of waste materials.

6. Provide a flow diagram of the wastewater process, and describe current method of handling stormwater run-off.

7. Identify which process lines employ spinning molds (SP).

8. Provide procedures for unloading cupola baghouse dust.

9. Provide copies of Monthly Discharge Rates (MPRs) submitted to TDHE, Nashville since 1985 (VF).

10. Describe solidification or other process employed to render the cupola baghouse dust non-toxic or suitable for disposal.

11. Provide drilling log data from the monitoring wells located around the Landfill.

12. Provide groundwater analysis data from the monitoring wells located on the Landfill.

LIST OF ADDITIONAL INFORMATION NEEDS (continued)

14. Provide information regarding railcar chemical unloading procedures such as prevention of spillage, clean-up methods, and delivery frequency.

15. Provide Underground Storage Tank Notification or identify location of any current or former underground storage tanks (if any), and integrity tests performed.

16. Provide a listing of catalysts and resins used during mold making and foundry process and a list of other solvents and chemicals used at the facility.

17. Provide information regarding disposition of non-hazardous wastes produced during all foundry processes.

18. Provide current and historical diagrams showing industrial and sanitary sewer lines, wastewater pipelines, and stormwater pipelines at the facility, and most current integrity tests performed.

19. If available, provide SARA list of raw materials used at the facility, and Title III list of emissions..

20. Provide descriptions and/or diagrams of all processes performed at the facility.

21. Provide RCRA Part A application.

22. Provide Hazardous Waste Notification Form.

II. Potential SWMU Information Needs

1. a) location in facility
   b) dates of operation
   c) design features
   d) volume and description of wastes managed
   e) history of release to environment
   f) regulatory status

INSPECTION SCHEDULE

The schedule which follows has been prepared based on the file review and is intended to allow a visual inspection of all SWMUs and other areas of concern on the site. The schedule may be adjusted as necessary at the time of the visit to accommodate unforeseen conditions.

The overall rationale of this inspection plan is to enable the team to inspect both facilities and the landfill. Some adjustments to the agenda may be necessary and can be made when on site to accommodate facility staff, geographical locations of units, and/or operational constraints.

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT
CUSTOMS HOUSE
701 BROADWAY
NASHVILLE, TENNESSEE 37219-5403

September 26, 1989

Mr. James H. Scarbrough, P.E.
Chief RCRA Branch
Waste Management Division
Region IV U.S. E.P.A.
345 Courtland Street
Atlanta, GA 30365

RE: State Concurrence on R.F.A.
For U.S. Pipe and Foundry
Soil Pipe Division E.P.A. ID # TND 074893777
Valve and Fitting Plant EPA ID # TND 980316301

Dear Mr. Scarbrough:

This letter is in response to your request, dated March 17, 1989, for formal State concurrence in relation to the above referenced RCRA facility assessment.

After reviewing this R.F.A., the Division of Solid Waste Management agrees with the information as presented.

If you have any questions concerning this review please call Ronnie Bowers at (615) 741-3424.

Sincerely,

Tom Tiesler, Director
Division of Solid Waste Management

JTT/RB/F1219269

Enclosure

cc: DSWM, Chattanooga Field Office
[redacted]

TND 07-489-3777-138

File (sep. copy)
AEB
12-16-92

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

DEC 15 1992

DEC 10 1992

4WD-RCRA

Mr. Jim Smallwood
U.S. Pipe & Foundry
P.O. Box 311
Chattanooga, Tennessee 37401

Re: RCRA Inspection at U.S. Pipe & Foundry, Chattanooga
Soil Pipe Plant: TND 07 489 3777
Valve & Fittings Plant: TND 98 031 6301

Dear Mr. Smallwood:

Enclosed is a copy of the Environmental Protection Agency's (EPA) inspection report documenting the results of the September 29, 1992, inspection of the subject facility. This was an EPA Lead Compliance Evaluation Inspection for the purpose of determining the facility's compliance with the applicable regulations.

No violations were identified during this inspection. If you have any questions regarding this inspection report, please contact Ms. Kristin Lippert at (404) 347-7603.

Sincerely yours,

John E Dickinson

John E. Dickinson, P.E.
Chief, RCRA Compliance Section
Office of RCRA and Federal Facilities

Enclosure

cc: Guy Moose, TDEC
Tom Tiesler, TDEC

Reference No. 49
Southside Chattanooga Lead Site
EPA ID No.: TNN000410686

RCRA INSPECTION REPORT

1) Inspector and Author of Report

Kristin A. Lippert
Environmental Engineer
KY/TN Unit, RCRA Compliance Section
Office of RCRA and Federal Facilities
Waste Management Division
U.S. Environmental Protection Agency, Region IV
Phone (404) 347-7603

2) Facility Information

U.S. Pipe and Foundry Company
Soil Pipe Plant: TND 07 489 3777
Valve & Fittings Plant: TND 98 031 6301
1000 West 19th Street
Chattanooga, Tennessee 37401

3) Primary Contact

Jim Smallwood
U.S. Pipe & Foundry
P.O. Box 311
Chattanooga, Tennessee 37401
Phone (615)265-4611

4) Inspection Participants

Jim Smallwood, U.S. Pipe
Jim Book, U.S. Pipe
Lynne Koby, TN DSWM
Kris Lippert, USEPA

5) Date and Time of Inspection

September 29, 1992

6) Applicable Regulations

40 CFR Parts 260, 261, 262, 264, 265 and 268; Rules Governing Hazardous Waste Management in Tennessee.

7) Purpose of Inspection

This was a Compliance Evaluation Inspection (CEI) and an EPA Lead Inspection. The inspection assessed the compliance of U.S. Pipe and Foundry Company ("U.S. Pipe"or the "Facility") with the applicable regulations.

8) Facility Description

The U.S. Pipe and Foundry facility is located near the Tennessee River in a heavily industrial area of northwestern Chattanooga. U.S. Pipe consists of two separate facilities at this location: the Soil Pipe Plant and the Valve & Fittings Plant. Each plant has its own EPA identification number.

In the 1960's, U.S. Pipe bought the area that is now the Soil Pipe Plant from Combustion Engineering. The two plants are not contiguous and U.S. Pipe has always operated the two plants as separate companies with different management.

The Valve & Fittings Plant consists of two separate operations. The Valve operation consists of a brass foundry and fire hydrant assembly plant; the Fittings operation is a gray foundry (cast iron) producing ductile iron pipe fittings. One cupola furnace and three electric furnaces are used in the smelting process in the Fittings operation. Basically, the materials used in the Fittings operation are scrap metal (steel), limestone and coke.

The Soil Pipe Plant, which was a gray foundry (cast iron) that produced iron pipes, closed its operations in May of 1990. This plant disposed of its generated fly ash in a landfill shared by both plants.

The landfill which encompasses twenty-eight (28) acres, is located between the two plants along the east bank of the Tennessee River, and is physically located on the Valve & Fittings Plant Site. The landfill is considered a demolition landfill, and receives foundry sand, fly ash and construction wastes.

EPA and the Tennessee Division of Solid Waste Management (the "Division") have agreed to regulate the landfill as a solid waste landfill, not as a hazardous waste disposal unit. According to the Consent Agreement and Final Order (dated December 12, 1990, RCRA Docket No. 89-28-6) between EPA and U.S. Pipe, the facility must, at a minimum, install two additional wells downgradient of the solid waste landfill. Also, the facility among other requirements must submit and implement a Sampling and Analysis Plan.

In a letter dated June 25, 1984, the Division notified U.S. Pipe that the fly ash from the cupola was hazardous waste, subject to RCRA regulations. Later in a letter dated September 6, 1984, the Division notified the facility that the fly ash was excluded from RCRA regulations pursuant to TR 1200-1-11-.02(1)(d)(3)(ii)(I) [40 CFR 261.4(b)(4)], commonly referred as the Bevill Amendment. EPA informed the

Division, in a letter dated December 29, 1984, that the Bevill Amendment does not apply to foundries. EPA's interpretation is that the exclusion is intended for fly ash from the utility industry or power generation devices, if more than fifty percent of the combustible material is fossil fuel. The Division declared that it would not change its position to concur with EPA's interpretation until a case dealing with fly ash in Alabama was settled. EPA informed the Division, in a letter dated November 10, 1988, (attached), that the Alabama case had been settled in favor of EPA's interpretation.

In reference to the Consent Agreement and Final Order, U.S. Pipe was cited for operating two unauthorized hazardous waste piles by treating the fly ash in concrete bins. Fly ash generated in the cupola was mixed in these areas with non-hazardous foundry sand and rendered non-hazardous before being disposed of in the on-site landfill.

As of January of 1989, U.S. Pipe no longer used the concrete bin waste piles to treat the hazardous waste fly ash. U.S. Pipe installed a fly ash treatment system and the fly ash generated is now collected in baghouse collectors. The collected fly ash exceeds the Toxicity Characteristic Leaching Procedures (TCLP) limits for lead (D008) and cadmium (D006). The facility adds cement and Solifix to the fly ash to render it non-hazardous. The treated fly ash is disposed of in the on-site landfill.

EPA considers U.S. Pipe's current treatment of the fly ash as a "totally enclosed treatment facility" (40 CFR §260.10). Therefore, under EPA's interpretation, the facility is no longer a hazardous waste generator or a treatment facility with regards to the fly ash generation and treatment. The Division, however, does not consider the treatment process to be totally enclosed because the Division views the baghouses as non-essential pieces of equipment. Since the Division has full rights under the Memorandum of Agreement between EPA and the Division and pursuant to Section 3006 of RCRA, 42 U.S.C. § 6926 to be more stringent than EPA in its implementation of the RCRA program, the Division is regulating U.S. Pipe as a hazardous waste generator.

The Division is reviewing and approving all closure activities required under the Consent Agreement and Final Order, and will oversee all corrective actions at U.S. Pipe.

9) <u>Inspection Findings</u>

The Soil Pipe Plant was not in operation at the time of the inspection. Access to this plant is controlled by security on an hourly basis for twenty-four hours a day, seven days a week.

One inactive hazardous waste treatment bin is located in the Soil Pipe Plant. The mixing bin had two concrete walls and a concrete floor. The mixing bin, located outside, did not have any run-off control. When this unit was in operation, mixing would take approximately one hour; the waste would then be removed and taken to the on-site landfill. This bin has been out of service since 1989.

The other inactive hazardous waste treatment bin is located in the Valve and Fittings Plant. This unit consists of three concrete walls and a concrete floor. No hazardous waste has been treated in this mixing bin since 1989. Since 1989, non-hazardous waste (such as: foundry sand, cupola slag, construction debris and plant trash) has been stored in this bin. The bin is checked daily, but no written documentation exists. No emergency equipment is located near the bin.

Currently, fly ash is conveyed directly from the cupola through the bag houses to the hoppers. From the hoppers, the fly ash is transported by pipe to a less-than-90-day storage tank. In this tank, the waste is mixed with Solifix and cement (lime), rendered non-hazardous and disposed in the on-site landfill.

Documentation shows that the less-than-90-day storage tank is emptied approximately three to four times a month. Hazardous waste signs are posted on the outside of the tank, and the treatment system is inspected and documented every other operating day.

U.S. Pipe also operates several Safety-Kleen units. These units use "140 solvent"; 140 solvent is non-hazardous and has a flash point greater than 140 degrees.

At the time of the inspection, U.S. Pipe was seeking a permit from the Division to expand its solid waste landfill.

According to the facility's annual reports and manifests, no hazardous waste was shipped off-site in 1989 and 1990. In 1991, U.S. Pipe manifested waste paint (F002, F003 and F005), cleaning liquids (F002, F003 and F005) and waste oil contaminated with 1,1,1 trichloroethane (F001) to an off-site disposal facility.

Every quarter, U.S. Pipe samples its groundwater monitoring wells at the solid waste landfill. Results have shown high concentrations of iron upgradient (11.5 ppm) and low concentrations downgradient (3.0 ppm).

10) <u>Conclusion</u>

U.S. Pipe & Foundry is undergoing RCRA closure and post closure activities of the two hazardous waste piles under the Consent Agreement and Final Order between EPA and U.S. Pipe. EPA no longer considers U.S. Pipe to be a generator or treater of fly ash waste due to its totally enclosed treatment process. (Although, it is a generator of F001, F002, F003 and F005.) EPA acknowledges that Tennessee may apply more stringent standards to the fly ash treatment process. However, no EPA violations were noted during the inspection.

12) Signed

Kristin A. Lippert
Environmental Engineer

10/22/92

Date

13) Approved

Darryl R Haines for

Jeaneanne M. Gettle
Chief, KY/TN Unit
RCRA Compliance Section

12/9/92

Date

John E. Dickinson

John E. Dickinson, P.E.
Chief, RCRA Compliance Section
Office of RCRA and Federal Facilities

12/9/92

Date

Reference No. 50
Southside Chattanooga Lead Site
EPA ID No.: TNN000410686

03

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
CHATTANOOGA ENVIRONMENTAL FIELD OFFICE
540 McCALLIE AVENUE, SUITE 550
CHATTANOOGA, TENNESSEE 37402-2013
(615) 634-5745 FAX (615) 634-6389

July 18, 1995

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
Z 058 200 765

Mr. Jim Smallwood
U. S. Pipe and Foundry Company
Valve and Fittings Plant
P. O. Box 311
Chattanooga, Tennessee 37401

Re: **Notice of Violation** (NOV) under the
Tennessee Hazardous Waste Management Act
T.C.A. 68-212-101 et. seq.
U. S. Pipe and Foundry Company
TND 98-031-6301

Dear Mr. Smallwood:

On June 20, 1995, the Division of Solid Waste Management (DSWM) conducted a Compliance Evaluation Inspection (CEI) at U. S. Pipe and Foundry (USPF). As a result of the inspection, U. S. Pipe and Foundry was found to be in violation of the Tennessee Hazardous Waste Management Act. Please refer to the attached Inspection Report for details of the violation and the inspection findings.

The violation identified in the attached report was corrected during the inspection; therefore, a compliance date is not required. However, DSWM does expect USPF to amend their waste management procedures to prevent future violations.

If you have any questions regarding this correspondence, please call me at (615) 634-5771.

Sincerely,

Janet Dutto

Janet Dutto
Division of Solid Waste Management
Chattanooga Field Office

RECEIVED
JUL 24 1995
Div. of
Solid & Hazardous Waste

JD/JSmal
cc: Jeaneanne Gettle, EPA, Region IV, Atlanta, GA
DSWM, Central File
Audrey Baker, DSWM, Enforcement Section

INSPECTION REPORT

1. Site/Operation Inspected:

   U. S. Pipe and Foundry Company
   Valve and Fittings Plant
   TND 98-031-6301
   2701 Chestnut Street
   P. O. Box 311
   Chattanooga, Tennessee 37401

2. Primary Contact:

   Jim Smallwood
   U. S. Pipe and Foundry Company
   Valve and Fittings Plant
   P. O. Box 311
   Chattanooga, Tennessee 37401

3. Date and Time of Inspection:

   June 20, 1995
   9:30 A.M. - ll:45 A.M.

4. Report Prepared By:

   Janet Dutto
   Tennessee Department of Environment and Conservation
   Division of Solid Waste Management
   540 McCallie Avenue, Suite 550
   Chattanooga, Tennessee 37402
   (615) 634-5771

5. Names and Affiliations of Inspection Participants:

   Janet Dutto, DSWM
   Jim Book, U. S. Pipe and Foundry
   Janice Horn, DSWM

6. Purpose of Inspection:

   To evaluate the facility's compliance with the applicable requirements of the Tennessee Hazardous Waste Management Act (Tennessee Rule Chaapter 1200-1-11).

7. Facility Description:

   Nature of Business:

Manufacturer of custom iron pipe and fittings

Hazardous Waste Generated:

D006/D008 emission control dust from cupola furnaces utilizing coke as fuel (59,639 Kg/month max.)

8. Facility Status:

Generator:

The facility generates approximately 45,300 Kg/month of baghouse dust which is hazardous for lead and cadmium (D008/D006). The baghouse dust is stored in a tank for less than 90 days and transferred to a treatment tank where it is rendered non-hazardous by a Solifix treatment. The non-hazardous baghouse dust is disposed of in an on-site solid waste landfill.

Unauthorized Disposal Units:

U. S. Pipe has submitted a Closure Plan for two concrete bins which were previously used as a storage and mixing area for hazardous waste baghouse dust (D008/D006) and foundry sand.

At the time of the inspection, the concrete bin at the valve plant had been covered by a new building and a concrete floor. The concrete bin at the soil pipe plant was empty.

9. Inspection Findings:

a) The site inspection revealed the following **violation:**

Rule 1200-1-11-.11(1)(a)1 incorporates by reference 40 CFR 279, except 40 CFR 279.57(b).

40 CFR 279.22(c) states in part that:

> Containers and above ground tanks used to store used oil at generator facilities must be labeled or marked clearly with the words "Used Oil."

At the time of the inspection, two (2) fifty-five gallon drums containing used oil were not labeled as required by the above Rule.

Action:

USPF corrected the violation during the inspection by marking the container with the words "Used Oil".

b) The records review included training records, inspection logs, annual report, MSD sheets, hazardous waste manifests, landban notifications, analytical data (treated dust and parts cleaning fluid), contingency plan, and tank volume records (empty dates). The records were found to be adequate.

c) USPF uses a parts cleaner identified as Zep Dyna 143 mineral spirits in the New Machine Shop, Automotive Shop, Old Machine Shop, and in a hook dip vat across from the cement lining area. MSD sheets and analytical testing indicate that this waste is currently non-hazardous. This waste is placed in an on-site used oil tank.

d) USPF has determined their cutting oils/coolant from the machine shops to be non-hazardous. This waste stream is sent to a solid waste processing facility identified as Hydrovac in Chattanooga.

e) A review of site hazardous waste manifests showed that USPF shipped approximately 15,000 pounds of waste paint (D001) off-site on November 29, 1994. According to USPF, this was an accidental generation due to a fire in a paint dip tank.

f) During the inspection, USPF was installing a new baghouse spring loaded bag system. Empty bags were removed and replaced with new bags.

9. Comments and/or Recommendations:

USPF should monitor the condition of the drums containing products which are stored outside. Some drums are beginning to rust and may need to be transferred into drums of better condition.

Signed: Janet Dutto Date: 7-18-95

Janet Dutto
Hazardous Waste Section Chief
Division of Solid Waste Management
Chattanooga Field Office

Signed: G M Moose Date: 7/18/95

Guy M. Moose
Field Office Manager
Division of Solid Waste Management
Chattanooga Field Office

JD/IRUSPF